HP 783XX Series and HP 788XX Series

Service Manual Volume 2

Patient Monitors and Neonatal Monitors

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Preface

This manual covers the following models:

■ MODELS 78352A/78352C/78353A/78353B/78354A/78354C PATIENT MONITORS

■ MODELS 78832A/78833A/78833B/78834A/78834C NEONATAL MONITORS

■ MODEL 78356A GAS MONITOR

The contents of this manual (Volume One) apply to HP Models 78352A/C, 78353A, 78353B,
78354A and 78354C series, 78832A, 78833A, 78833B, 78834A/C series, and 78356A with the
following serial numbers prefixed:

MODELS	PREFIX	MODEL	PREFIX
78352A	2640G	78832A	2412G
78352C	First Issue	78833A	2413G
78353A	2348G	78833B	261OG
78353B	2612G	78834A	2611G
78354A	2613G	78834C	First Issue
78354C	First Issue		
78356A	2717G		

Instruments with higher serial numbers may contain production changes. In such cases refer
to the Manual Change sheets and Publication Change Notices enclosed with this manual.

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instruments which have already been retailed.

CONTENTS OVERVIEW

This manual contains service information for the Hewlett-Packard 78352/3/4, 78832/3/4 and 78356A monitors. The information is divided into two sections:

■ Chapter 1 — Service

■ Chapter 2 — Schematics

■ Chapter 3 — Replaceable Parts

Further sections covering Theory of Operation and Maintenance Checks are contained in Volume 1 of the manual (part number 78354-9000A).

Documentation relating to these monitors:

Instrument	Document	Part Number
78352A	Operating Guide	78352-90001
78353B/4A	Operating Guide	78354-90001
78352C/4C	Operating Guide	78354-92001
78352A/2C/3B/4A/4C	Installation Guide	78354-90011
78833B/4A	Operating Guide	78834-91001
78834C	Operating Guide	78834-92001
78833B/4A/4C	Installation Guide	78834-90011
78356A	Operating Guide	78356-90001
78356A	Installation Guide	78356-90011

Note

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78352A }
78352C } monitors are        and  78832A } monitors are
78353A } referred to              78833A } referred to
78353B } in text as               78833B } in text as
78354A } 783XX Series             78834A } 788XX Series
78354C }                          78334C }
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Special Notation

Notes, cautions, and/or warnings may accompany the instructions in this manual. They are defined below:

Note	Notes provide emphasis to information or additional information "off line" from a procedure.
Caution	Cautions highlight procedures that must be followed to avoid damage to the recorder.
Warning	**Warnings highlight procedures that must be followed to avoid hazards to human life or safety.**

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1e. Error Codes and Messages

2. Schematics

2a. Schematic Diagrams

2b. Connection Boards

3. Replaceable Parts List

Figures

Tables

Service

Introduction

Chapters 1a, 1b, 1c, 1d and 1e provide all the Service information required for the 78XXX Series Patient and Neonatal Monitors. The Service Chapters cover the following:

- **Chapter 1a** Disassembly Procedures
  - □ Top cover removal
  - □ Board removal
    (Display uP, Interpolation, Parameter)
  - □ Power supply assembly removal
  - □ Power supply disassembly
  - □ Audio module removal
  - □ Front panel removal
  - □ Front panel disassembly
  - □ NIBP Board and Pump removal
    78354A/C monitor..78352A/C monitor
  - □ Mother Board removal
- **Chapter 1b** Reassembly Procedures
  - □ Mother Board installation
  - □ Board installation
  - □ Front panel reassembly
  - □ Front panel installation
  - □ Power supply reassembly
  - □ Power supply assembly installation
  - □ NIBP reassembly
  - □ Cover installation

- **Chapter 1c** Adjustments

- **Chapter 1d** Jumpers and Switch Programming

- **Chapter 1e** Error Codes and Messages

Disassembly and General Service Precautions

Caution

Read the following precautions thoroughly before performing any of the disassembly procedures. Serious damage to the instrument can result if the precautions are not strictly followed.

■ The front panel is vulnerable to scratching. Avoid rough handling of the panel.

■ When the chassis is removed from the case, bare metal edges are exposed which can scratch the work surface. Be careful that the sharp edges and corners of the chassis do not scratch the work area surface.

■ The input amplifiers have a floating ground section which is isolated from the remainder of the board.

Never handle this section of the board - oil, dirt, dust, etc., deposited on this section can cause leakage paths which can degrade floating circuit isolation and performance.

■ Handle all circuit boards by the edges; CMOS circuits operate with currents in the nanoampere range and leakage paths caused by skin oils, dirt, dust, etc., can cause inaccurate circuit performance.

■ As all of the screws in the Monitor have been treated with a special varnish they should not be screwed in and out more than about ten times. After this, replace with new screws.

■ Generally, the insulation resistance of the oxide layer in MOS IC structures is very high, and the oxide layer is very thin. Because of this, it is possible that the static voltages usually present on clothes and the human body will be enough to generate a potential difference across the insulator, high enough to cause a breakdown of the insulating layer.

The following precautions should be taken while handling these ICs. Particular care should be taken under conditions of low humidity.

1. Store new ICs by inserting them into a urethanepolyester cushion (which is conductive), or wrapping them in aluminium foil, so that all the pins are at the same potential.

   (The ICs should be stored in that manner until mounted on the circuit board.)

2. Check the soldering iron for possible power-line leakage current. To do this, connect an ohmmeter to the tip of the soldering iron and the plug. If there is a leakage path, use another soldering iron.

3. Equalize any potential difference between the clothes, the tools in use, the work bench, the set being worked on, and the packaged IC by touching them all in succession with the hands or a conductive wire or tool.

4. When it is necessary to handle the IC with the fingers, do not touch any pin, hold the IC at the ends of its plastic package case.

Warning **AVOID ELECTROSTATIC DISCHARGE !**

The following precautions should be observed prior to beginning disassembly:

1. Turn the instrument off.

2. Remove the power cord and all signal cables from the rear panel.

Warning	If the instrument is to be reconnected and the power turned on with the rear panel removed, low voltage and dangerous high voltage sources would be exposed. Be careful. Do not power up the chassis on a conductive surface such as a bare metal table. Place the chassis on a non-conductive material, such as heavy cardboard.

In Chapter 1a the disassembly procedures are arranged from top assembly downwards. Chapter 1b contains information on reassembly.

Cleaning

The instrument should be clean and free of dust and dirt. Clean as required with a lint-free cloth or sponge dampened with warm soapy water or alcohol. The front panel is more sensitive to scratching than the other surfaces of the Monitor. Be careful, especially when cleaning this surface.

Caution	Do not allow any liquid to enter the instrument case. Do not pour liquid on the instrument while cleaning. Never use any abrasive material such as steel wool or silver polish, and never use strong solvents as acetone to clean the monitor.

Extender Boards

Four extender boards and one cable are needed for servicing the Monitor:

1 x 5061-5640	Parameter Board / Display uP Board
1 x 5061-5641	Interpolation Board / Display uP Board
1 x 5060-1805	System Board
1 x 78353-66589	Power Supply Extender Board (15 pin connector)
1 x 78353-61607	Power Supply Extender Cable

Display uP Board Exchange

After exchanging the Display uP Board, wait at least 20 seconds before switching the instrument back on, otherwise an error message will be generated

1a

Disassembly Procedures

3/4 and Full Modules

Top cover removal

1. Undo and remove the 4 upper screws on the instrument case.
2. Raise the front of the top cover and lift cover off.

Die beiden oberen Fotos von alter Seite 1-5 nebeneinander hier einfügen

Board Removal (display uP, interpolation or parameter)

1. Lift out the board stabilizer which holds the boards in place.
2. Undo the colored plastic clips at either end of the board.

Die beiden unteren Fotos von alte Seite 1-5 nebeneinander hier einfügen

3. Lift the board out.

Das erste Foto von alte Seite 1-6 hier einfügen

Power Supply Assembly Removal

1. Undo the screw holding the power supply assembly in place. This screw has a compression washer underneath which must be re-fitted. On monitors with NIBP, detatch pressure tube from input connector and NIBP board, also detatch power supply lead from NIBP board.

2. Lift out the power supply assembly, complete with NIBP pump (if fitted).

Die zweiten und dritten Fotos von alte Seite 1-6 hier einfügen

Power Supply Disassembly

1. Remove the power supply cover by undoing the two screws on the top and the three screws on the side.

Das letzte Foto von alte Seite 1-6 hier einfügen

2. For access to the secondary power supply board A6, unscrew the rear panel assembly (2 screws).

3. Disconnect the transformer and battery connector (not shown).

Die beiden oberen Fotos von alter Seite 1-7 nebeneinander hier einfügen

4. Loosen the potential equalisation connector with a socket wrench and remove.

5. Slide out rear panel insert. (On later models the label is removed from underneath).

Die beiden unteren Fotos von alter Seite 1-7 nebeneinander hier einfügen

6. Undo two screws holding the power inlet in position (required only for access to power inlet).

7. For access to the primary power supply board A7, undo the three screws holding it into position.

Die beiden oberen Fotos von alter Seite 1-8 nebeneinander hier einfügen

8. Power supply board A7 is now fully accessible.

Das letzte Foto von alte Seite 1-8 hier einfügen

Audio Module Removal

1. Press the button on the top of the audio module cover, and pull the cover off the module. Later models have a screw in the rear panel to secure the audio cover.

2. Undo the 1 or 2 screws on the inside of the audio module. Later models have only one screw, remove this and slide the complete audio module out after disconnecting audio module cable and battery board cable (optional).

Die beiden oberen Fotos von alter Seite 1-9 nebeneinander hier einfügen

3. Pull audio module a little away from the rear of the instrument and disconnect the cable from the battery board. The battery board can now be removed (optional).

4. Disconnect the ribbon cable from X9 (and X19 if applicable) on the mother board and feed out through the slot in the rear bracket. The audio module can now be removed.

Die beiden unteren Fotos von alter Seite 1-9 nebeneinander hier einfügen

Front Panel Removal

1. The parameter boards must be lifted out before the front panel can be removed.

2. Disconnect the CRT socket, the ground wire, the cable to the keyboard assembly, the HV connection and the choke connection.

Die beiden oberen Fotos von alter Seite 1-10 nebeneinander hier einfügen

3. Undo the screw on the inside of the front panel, next to the CRT, and tilt the front panel assembly forwards.

4. **788XX series, 78352C, 78354C**
   Disconnect the three lamp board wires from the mother board.

Die beiden unteren Fotos von alter Seite 1-10 nebeneinander hier einfügen

5. **788XX Series only**

   Undo the one screw on the lamp board and remove as shown (push the lamps from the front of the panel to access the board).

   78352C, 78354C and 78834C

   The LED lamp board is mounted with two screws to the keyboard assembly and can only be removed with the complete keyboard assembly.

6. Lift front panel assembly out.

Die beiden oberen Fotos von alter Seite 1-11 nebeneinander hier einfügen

Front Panel Disassembly

1. Unscrew the two CRT holders, one on either side of the tube.

2. Lift out the CRT, the CRT holders, grounding spring (earlier models have a side hook which needs to be unclipped, it is not necessary on later models and cannot be re-ordered).

Die beiden unteren Fotos von alter Seite 1-11 nebeneinander hier einfügen

3. Unscrew the parameter connector assemblies (the type and fitting of the connector assemblies varies depending on parameter configuration).

4. The cover can now be lifted off the assembly (as shown) and the connector can also be removed from the front panel.

Note ☝	Some connector boards have spring contact for shield connection. Be careful at reassembly to avoid damaging the spring.

Die beiden oberen Fotos von alter Seite 1-12 nebeneinander hier einfügen

5. Not applicable to the 78352C, 78354C and 78834C monitors:

   Undo three screws to remove the keyboard assembly. (The keyboard assembly on the 78352C, 78354C and 78834C monitors is not removable, it is glued to the front panel).

Das letzte Foto von alte Seite 1-12 hier einfügen

NIBP Board and Pump Removal

78354A Monitors with old ac pump:

1. Pull out NIBP parameter board until access to the tube connections are possible.

Das erste Foto von alte Seite 1-13 hier einfügen

2. Disconnect the tubes from the front panel and the T-piece leading to the pump. Leave tube attached to board.

Das zweite Foto von alte Seite 1-13 hier einfügen

3. Disconnect cables from the pump control board to the parameter board. The board can now be completely removed.

Das letzte Foto von Seite 1-13 hier einfuegen

4. Disconnect power supply to control board and to pump and remove the control board by tilting towards pump to unclip it and then lift out.

Das erste Foto von Seite 1-14 hier einfuegen

5. The four screws holding down the pump can now be removed (four outer X-headscrews).

    Extender board with pump removed showing ribbon cable connections to the mother board.

    Das zweite Foto von Seite 1-14 hier einfuegen

6. The front panel can be removed by removing the screw shown and sliding out the panel. Note the position of the switch assembly and LED board.

    Das letzte Foto von Seite 1-14 hier einfuegen

78352A/C Monitor: 78354A/C with dc pump:

1. Disconnect tubing from T-piece branch leading down to front panel connector and to pump. Remove connector (brown and red wires) on NIPB board. This connects to the pump control board.

   Note that for the new NIBP Board (78352-66538), the removed connector (black, brown, red, orange wires) connects to the power supply and the pump.

   Das erste Foto von alte Seite 1-15 hier einfuegen

2. The NIPB board and other parameter boards may now be removed.

   Das zweite Foto von alte Seite 1-15 hier einfuegen

3. *Pump:* to remove the pump remove connector (red and black wires) to pump control board and remove the front 2 nuts securing the pump assembly to the vibration supports. *(Refit new external tooth lock washers if nuts are loosened p-n 2190-0413).*

   Note that for new NIBP Board, the pump is isolated when disconnected from the power supply and the board. The pump is removed by undoing two nuts and washers securing it to the power supply.

4. *Pump Control Board:* to remove the pump control board, disconnect from power supply, remove screw (arrowed) and gently push down to free lower end of board from slot and then rotate out. Note that the new NIBP Board has no pump control board.

Die beiden letzten Fotos von alter Seite 1-15 nebeneinander hier einfuegen

Mother Board Removal

1.

Note

👉

For access to the Mother Board, the front panel assembly does not necessarily have to be removed. Simply tilt it forward - all cables are long enough to permit this extension.

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2. *Looking from front:* Undo the screws holding the mother board in place: two on left (also holding side LH bracket), three on right (one of which holds the Audio bracket), two on rear (also holding rear bracket on some models) and one in center.

Die beiden oberen Fotos von alter Seite 1-16 nebeneinander hier einfuegen

3. Unscrew the green/yellow ground wire, which is also used to secure the Mother Board and screening strip.

4. Undo the two screws which fasten the two grounding brackets to the Mother Board. Lift grounding brackets out.

Die beiden unteren Fotos von alter Seite 1-16 nebeneinander hier einfuegen

5. Lift up the Mother Board at the rear and pull out. (Picture shows side panels removed, but this is not necessary).

6. The power on/off switch coupler rests in the bottom cover underneath the Mother Board. Note position of nylon spacer ring.

Die beiden Fotos von alter Seite 1-17 nebeneinander hier einfuegen

Reassembly Procedures

3/4 and Full Modules

Mother Board Installation

1. Replace the Mother Board, making sure that the protrusion of the power on/off switch coupler fits through the slot provided in the Mother Board.

2. Center the Mother Board with the center screw and replace LH side bracket and its 2 screws (early models also have a LH side center screw as shown). Replace the 3 screws on the RH side (including Audio bracket and RH end of screening strip), the 2 rear screws and screw holding green/yellow ground wire and LH end of screening strip. Do not tighten until all 9 screws holding the Mother Board are back in position. (Some models may have upto 12 screws holding the board down).

Die beiden oberen Fotos von alter Seite 1-18 nebeneinander hier einfuegen

3. Reconnect the ground bracket (in later models this comes off with the Mother Board when the two screws are released and a copper strip replaces the wire).

4. Reconnect the floating ground bracket (in later models this comes off with the Mother Board when the two screws are released).

Die beiden unteren Fotos von alter Seite 1-18 nebeneinander hier einfuegen

5. Screw both brackets back into place.

Bitte oberstes Foto von alter Seite 1-19 hier einfuegen

6. The Mother Board is now ready to receive the power supply assembly, boards, front panel etc.

Bitte zweites Foto von alter Seite 1-19 hier einfuegen

Board Installation

1. Insert the Display up and the Interpolation Boards back into the corresponding connectors.

Bitte unterstes Foto von alter Seite 1-19 hier einfuegen

Front Panel Reassembly

1. Make sure that the photo resistor on the keyboard assembly ...

Bitte oberstes Foto von alter Seite 1-20 hier einfuegen

2. ... is positioned over the front-panel recess provided for this purpose.

Bitte zweites Foto von alter Seite 1-20 hier einfuegen

3. Screw the parameter connector assemblies back into position (connectors facing upwards).

Bitte drittes Foto von alter Seite 1-20 hier einfuegen

4. Place the CRT back into position - ensure no dirt or other material is trapped between CRT and front panel screen.

5. Place screws in right-hand bracket. Do not tighten. Hook the grounding spring for the CRT coating into position - do not bend the spring hook. Replace screws in left-hand bracket remembering to include black wire from power lamp assembly.

Bitte letztes Foto von alter Seite 1-20 hier einfuegen

6. Tighten all of the screws so that the CRT is positioned symmetrically. Hook up the other end of the ground spring for the CRT coating.

Bitte erstes Foto von alter Seite 1-21 hier einfuegen

Front Panel Installation

1. Fit the front panel assembly back into position.

Bitte zweites Foto von alter Seite 1-21 hier einfuegen

2. Reconnect the CRT socket, the ground wire, the cable to the keyboard assembly, the HV connection and the choke connection. Reinsert parameter boards.

Bitte letztes Foto von alter Seite 1-21 hier einfuegen

Power Supply Reassembly

1. Secure the power inlet connector back into position.

2. Insert primary power supply board A7.

   Note: Make sure that Board fits exactly in slot of rear heat sink.

Bitte die beiden obersten Foto von alter Seite 1-22 nebeneinander hier einfuegen

3. Screw back into place (two lower screws).

4. Reconnect transformer to the primary power supply board A7.

Bitte die beiden untersten Fotos von alter Seite 1-22 nebeneinander hier einfuegen

5. Position secondary power supply board A6 in slot provided and screw to rear panel.

6. Reconnect transformer to the secondary power supply board A6, making sure that all of the connector pins make proper contact. Reconnect battery connection (if fitted).

Bitte die beiden obersten Fotos von alter Seite 1-23 nebeneinander hier einfuegen

7. Reinstall power supply cover.

8. Screw two side screws back into position.

Bitte die beiden untersten Fotos von alter Seite 1-23 nebeneinander hier einfuegen

9. Screw rod back into position between the two power supply boards.

10. Secure top of cover with the two screws.

Bitte die beiden obersten Fotos von alter Seite 1-24 nebeneinander hier einfuegen

11. Slot rear-panel insert back into position.

12. Secure rear panel insert by screwing the potential equalisation connector back into position.

Bitte die beiden untersten Fotos von alter Seite 1-24 nebeneinander hier einfuegen

13. Check that the soldered ground connection is still intact.

Bitte oberstes Foto von alter Seite 1-25 hier einfuegen

Power Supply Assembly Installation

1. Slot the power supply assembly into the bottom cover at the rear of the Monitor. Lower the assembly back into position taking care not to clamp any of the cables underneath.

2. Screw power supply assembly back into position with the one screw required.

Bitte die beiden mittleren Fotos von alter Seite 1-25 nebeneinander hier einfuegen

3. Check that power on/off switch coupler makes mechanical contact with the switch. Test the on/off switch to see that it works.

Bitte unterstes Foto von alter Seite 1-25 hier einfuegen

NIBP Pump and Board Reassembly (78352A/C and 78354A/C)

Reassembly is the reverse of disassembly. With the 78352A monitor care should be taken when sliding in the NIBP board not to trap the tubing leading to the transducer between the NIBP board and any adjacent board. Fit tube leading down to front panel connector between the board and RHS side panel. Note the correct tubing connections:-

78352A/C, 78354A/C (dc pump)   78354A (ac pump)

Bitte die beiden obersten Fotos von alter Seite 1-26 nebeneinander hier einfuegen

Cover Installation

Remount side covers (4 bottom screws) and put the board stabilizer back into position. Remount top cover with 4 top screws.

Bitte die beiden unteren Fotos von alter Seite 1-26 nebeneinander hier einfuegen

1c

Adjustments

Introduction

In order to make any adjustments it is necessary to remove the top cover of the instrument; so, during the adjustment procedures take care to avoid contact with exposed high voltage sources.

To make any of the adjustments it is necessary to enter the monitor test mode.

To do this, first ensure that the monitor is switched off for at least 20 s.

Now press the softkeys labelled ⎍ or (Cal Mark) and ⌦ or (Suspend) simultaneously, then switch the monitor on whilst keeping the buttons pressed. Hold pressed until the prompt tone is heard. The CRT adjustment grid will now appear on the screen.

In this mode the softkeys have the following functions:

(Calmark) ⎍

(Stop) STOP — Press to display service/test waveform - non- overlapping (used in "CRT Adjustments" and "Interpolation Board Adjustments" See Figure 1c-3*

(Overview) ♠ — Press to display service /test waveform with channels 2 and 3 overlapping (used in "Interpolation Board Adjustments".

(Patient Data) ⌦ — Press to enter into system 780 configeration mode (only if 780 annotating system and SDN board is installed) (used in "System 780 Configuration Adjustments")

(Record) ⌦ — Press to display part numbers of ROMs loaded (hence software revision status eg. 5180-XXXX, 5181-XXXX)

The remainder of this section contains the detailed adjustment procedures.

*only one service/test waveform available in 78352A/C.

CRT Adjustments

These adjustments are made using components on the motherboard and the CRT assembly and are normally only required after a mother board or CRT exchange. The location of these components is shown in Figure 1c-1.

Display the CRT adjustment grid on the screen as described in "Introduction" then follow the adjustment procedure below:

1. Optimize the display with cut-off adjust A1R55

2. If the horizontal synchronization is out of range, adjust with A1R21

3. Adjust the horizontal amplitude with A1R28. The vertical lines to the right and the left of the grid should just be visible at the edge of the screen.

   If the adjustment grid is not in a central position it will not be possible to make this adjustment. In this case, rotate the centering magnets (see Figure 1c-1) on the CRT until the grid is centered then repeat the adjustment.

4. Adjust the linearity with A1R22. The horizontal grid subsections should all be of equal length.

5. A1R28 and A1R22 are interactive, so repeat steps 3) and 4) until optimum result is achieved.

6. Adjust the vertical amplitude with A1L2. The horizontal lines above and below the grid should just be visible at the edge of the screen.

   If the adjustment grid is not in a central position see paragraph 4) for centering procedure.

7. Adjust the linearity with A1L3. The vertical grid subsections should all be of equal length.

8. Next press the softkey labelled STOP to display the service/test waveform (non-overlapping).

9. Check the interpolation - there should be no modulation of the test waveform intensity. If there is modulation, adjust A1R55 again until it is reduced to a minimum.

10. Switch the instrument off then after 20 seconds back on again. The initial monitoring display should appear.

11. Adjust the focus with A1R38.

12. Check the length of the baseline - it should be 97 mm.

13. Adjust the intensity with the rear panel screwdriver control.

14. Switch the monitor off and after 20 seconds on again, and display the CRT adjustment grid. (see "Introduction")

15. If the shape of the adjustment grid is distorted, i.e. the gridlines are curved, optimise the shape by repositioning the small magnets on the ring at the front of the deflection yoke assembly. See Figure 1c-1.

Components for Adjustment   Centering and Ring Magnets

Diagram und Photo von alte Seite 1-29 hier einfügen

Figure 1c-1. Location of Components for Adjustment and of Centering and Ring Magnets

Interpolation Board Adjustments

Note

The 78352A/C monitor uses Interpolation Board 78352-66503, all other monitors described in this manual use Interpolation Board 78353-66503. 78352A/C adjustments are contained in brackets.

All interpolation board adjustments are made using the nine potentiometers on the 78353-66503 board and three potentiometers on the 78352-66503 board.

Gain and Offset Adjustments

First enter the *monitor* test mode and press **STOP** key to display the service/test waveform in non-overlapping mode (see "Introduction"). Now follow the adjustment procedure below:

a. Adjust the gain for channel 1 using A3R10 (78352A/C: A3/R19) until the distance between the 1st (bottom) and 3rd levels of the step waveform is approximately the same as the distance between the graticule lines.

b. Adjust the offset for channel 1 using A3R28 (78352A/C: A3/R29) until the two levels of the step waveform are directly on the graticule lines

c. As A3R10 and A3R28 (78352A/C: A3/R19 and A3/R29) are interactive it may be necessary to repeat steps a) and b) until an optimum result is obtained.

d. Adjust the gain and offset for channels 2 and 3 as for channel 1 above but using A3R30, A3R8 and A3R20, A3R18 respectively.

e. † To check the adjustment, press 👆 or (Overview) key to display the service test waveform with channels 2 and 3 overlapping (see "Introduction").

f. † The waveforms for channels 2 and 3 should be of equal size and the step waveforms level with each other (Figure 1-56). If not, adjust the offset and gain for channels 2 and 3 in this mode until an optimum result is achieved.

Baseline Width Adjustment

Enter the monitor test mode and display the service/test waveform (see "Introduction")

a. Adjust the width of the baseline of the channel 1 waveform using A3R37 *(78352A/C: A3/R12)*. The waveform should have the same intensity at every point.

b. † Adjust the baseline width of the channel 2 and 3 waveforms in the same way using A3R39 and A3R38 respectively.

Note

† Not applicable to 78832A and 78352A/C)
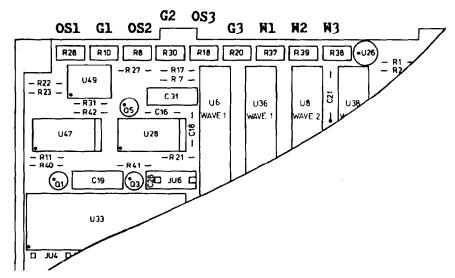
Figure 1c-2. Location of interp. bd adjustment potentiometers (78353 - 66503)

See Chapter 1c for details on how to enter the following display modes:
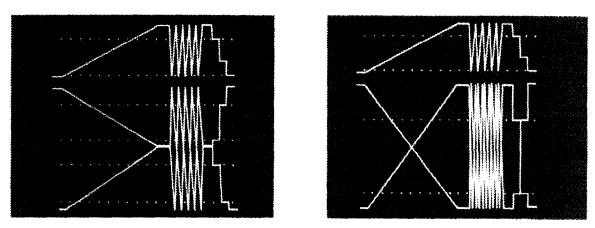
Figure 1c-3. Service/Test Waveform

Service/test waveform
(non-overlapping,
3 channel interp.)

Service/test waveform
(channels 2 + 3 overlapping,
3 channel Interp.)
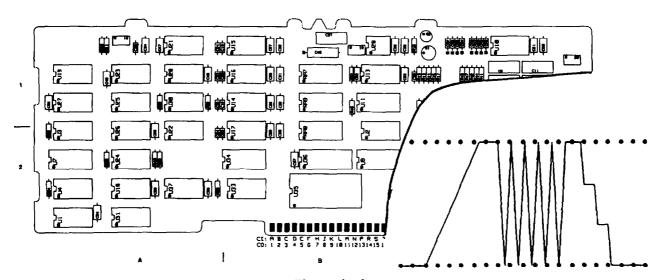
Figure 1c-4.
Location of interpolation board (78352 - 66503) adjustment potiometers and 78352A/C
service/test waveform

ECG Adjustments

Offset Adjustment

1. Switch monitor on and connect ECG patient cable and lead set.

2. Short all the leads together.

3. Select diagnostic mode and ensure that switch 1 of A22S1 is closed.

4. Ensure that switch S2 on the mother board is programmed to output the ECG wave at the rear panel phone jack (switch 4 closed and switches 1, 2 and 3 open).

5. Connect a DVM to the rear panel phone jack.

6. Adjust A22R69 so that the DVM reading equals 0V ± 20 mV.

Notch Filter Adjustment

60 Hz   78832-66542, 78354-66542

50Hz   78832-66522, 78354-66522

1. Connect the test equipment as shown in Figure 1c-5

2. Ensure that switch S2 on the mother board is programmed to output the ECG wave at the rear panel phone jack (switch 4 closed and switches 1, 2 and 3 open)

3. Switch monitor on and select diagnostic mode and lead II.

4. Apply a 5 V peak-to-peak sine wave at 50 or 60 Hz (main frequency) to the test circuit.

5. Trigger the oscilloscope to the line frequency (only possible when the line frequency equals the notch frequency).

6. Adjust A22R82 until the wave ouput displayed on the oscilloscope is at minimum amplitude.

Note

The Full Lead ECG board (78354-66522) has 3 switches, the positions and location of which are shown in the Jumper & Switches in "ECG Board (Full lead) 78354-66522, 66722" in Chapter 1d.
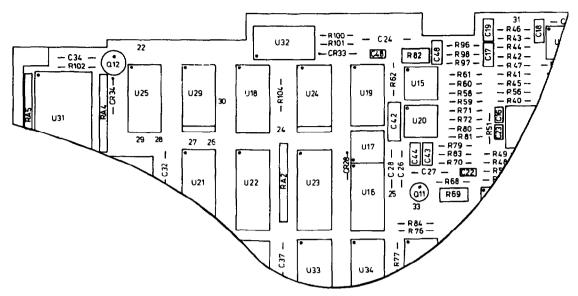
Figure 1c-5. Location of A22R69 and A22R82
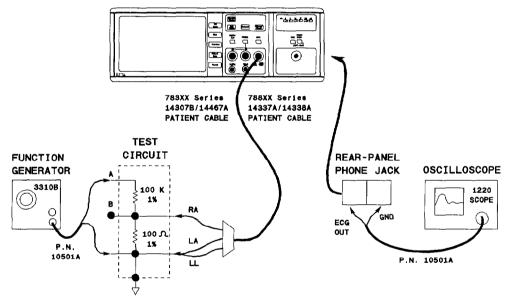
Figure 1c-6. Notch Filter Adjustment - Test Equipment

Power Supply Adjustments

-4 Volt Adjustment

a. Switch the monitor on.

b. Connect a DVM to ground and to the -4 V test pin at the top of the power supply board A6.

c. Adjust A6, R5, located next to this pin, so that the DVM reading equals -4 V ± 3 mV.

System 780 Annotating Analog Interface (Opt. J11)

The annotating 780 system board (78353-66592) provides full parameter, alarm and recorder information. There are six alternative output- connector configurations which are shown in table 1. (For more detailed information please refer to pages 1-42 to 1-44)..

System 780 Configuration Adjustments

The system interface is configured using the softkeys. First, enter the system 780 configuration mode as described in "Introduction".

The functions of the softkeys are now as follows:

(Cal Mark) ⊓	Press to select one of the seven possible configurations of the signals at the system output connector (see Table 1c-1).
(Stop) STOP	Press to select latching or nonlatching system alarms.
(Overview) ⚫	Press to change temperature offset (see offset adjustment below). This should not be necessary as the value is set at the factory.
(Patient Data) ⟳	Press to change general parameter offset (see offset adjustment below). This should not be necessary as the value is set at the factory.
(Record) ⊓	Press to store configuration values. When store procedure is successfully completed the monitor returns to the previous operating level and the CRT adjustment grid is displayed.

Offset Adjustment

It may be necessary to adjust the system 780 board if the **EAROM** has lost information. In this case follow the procedure below:

a. General parameter offset
With the monitor in system 780 configuration mode, measure the general offset at TP1. If it is zero volts the offset is correct. If it is not zero volts the offset must be adjusted using the softkey indicated above.

The softkey label will show the offset correction step number and will rotate over the full positive and negative range, increasing the number by one each time the key is pressed. Press the softkey until the value is zero volts. The step size is 2.5 mV.

b. Temperature parameter offset

Note ☞	With option N12 (German temperature standards) this adjustment is not possible.

With the monitor in system 780 configuration mode, measure the temperature offset on pin 10 of system output connector (J91). If it is zero volts the offset is correct. If it is not zero volts the offset should be adjusted. To enable the adjustment procedure, connect X3 pin 2 to ground.

For adjustment, use the temperature offset softkey. The procedure is the same as for the general parameter offset described above. Press the softkey until the value is zero volts. The step size is 1.25 mV.

c. Store the offset correction values by pressing the store softkey. The monitor returns to the previous operating level (monitor test mode) when store procedure is complete.

Note	A gain adjustment is necessary in monitor test mode for temperature.

d. Temperature gain adjustment

Note	With option N12 (German temperature Standards) this adjustment is not possible.

With the monitor in *monitor test* mode (grid raster display) measure the temperature signal on pin 10 of system output connector (J91). The measurement value in this operating level should be 2.558V ± 0 mV, otherwise adjust with potentiometer R204.
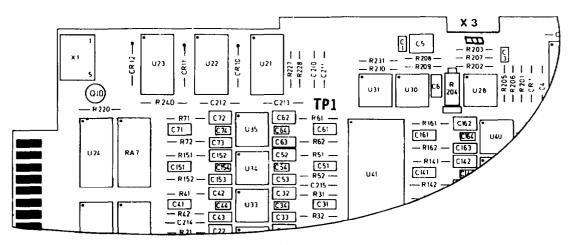
Figure 1c-7. Location of R204 and TP1

Explanation of Configurations in Table 1c-1.

Configuration 0: Monitor with 7811B control center without arrhythmia system. Bedside recorder 78171/2/3.

Configuration 1: Monitor with 78501/2/4/8 Speakeasy control center without arrhythmia system.

Configuration 2: Monitor with 7811B control center with arrhythmia system. No parameter values Systole and Diastole for invasive blood pressure 2.

Configuration 3: Monitor with 78501/2/4/8 Speakeasy control center with arrhythmia system. No Resp. or CO2 curve.

Configuration 4: Corresponds to Config. 0, but with a fixed allocation of the recorder channels 1 and 2 with "Delayed ECG" on channel 1 and "Delayed Press 1" on channel 2. This corresponds to the default configuration in Config. 0.

Configuration 5: Special neonatal version with CRG-option. Cannot be selected on the adult-monitor mode. Switch S1 must be opened in operation with 8232 alarm recorder.

Configuration 6: Only on OR multi-channel recorder. This version cannot be selected on the German language option as there is no allowance by PTB on 2. temperature.

Warning **In configurations 0-4 and 6, the switch S1 must be closed.**

Table 1c-1. System Output Configurations

J92 pin no.	Configurations 0-6							
	0	1	1*	2	3	4	5 #	6 ***
1	ECG wave analog							
2	pleth wave	encoded deselect		pleth wave	encoded deselect	pleth wave	tcpO$_2$	
3	signal gnd.							
4	recorder data	encoded alarm		recorder data	encoded alarm	recorder data		tcpCO$_2$
5	alarm gnd.							
6	heart rate average							
7	INOP							
8	reset							
9	patient alarm							
10	temp 1.							
11	resp. rate							
12	recorder return	encoded INOP		recorder return	encoded INOP	recorder return		Temp.2 ****
A	scaled pressure 2 wave		absolute pressure 2 (60)	scaled pressure 2 wave	absolute pressure 2 (60)	scaled pressure 2 wave	tcpCO$_2$	ECG wave
B	scaled pressure 1 wave				absolute pressure 1 (300)	scaled pressure 1 wave		absolute pressure 1 wave
C	systolic pressure 1							absolute pressure 2 wave
D	diastolic pressure 1							absolute pressure 3 wave
E	mean pressure 2						heart rate b-to-b	CO$_2$ wave
F	systolic pressure 2			absolute pressure 1 wave (300)	systolic pressure 2		cardio** respirogram mode	pleth wave
H	CO$_2$/resp. wave	resp. wave	CO$_2$ wave	resp. wave	scaled pressure 2 wave	resp. wave		

Table 1c-1. System Output Configurations (continued)

J92 pin no.	Configurations 0-6							
	0	1	1*	2	3	4	5 #	6***
J	recorder channel 2		ET CO_2	recorder channel 2	scaled pressure 1 wave	delayed pressure 1 wave	delayed resp. wave	NIBP wave
K	ALARM ON/ OFF							
L	diastolic pressure 2		Fi O_2	absolute pressure 2 wave (60)	diastolic pressure 2		Fi O_2	
M	mean pressure 1							ET CO_2
N	recorder channel 1	control state 1	control state 5	recorder channel 1	control state 1	delayed ECG wave	delayed HR b-to-b	HR b-to-b

*   output configuration for CO_2 /O_2 parameter

**   for cardiorespirogram mode, switch S1 on system board should be open

***   no Aux Wave because it is available as analog signal

****   output configuration not available in German Language Option (PTB)

\#   only available in 788XX series
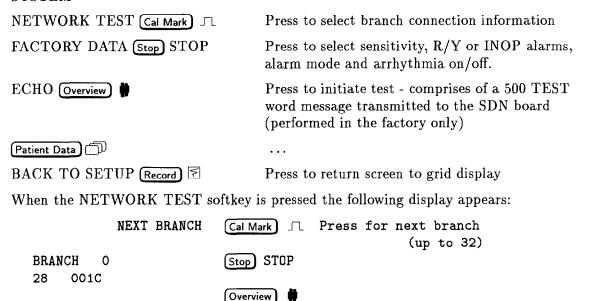
SDN Configuration Adjustments

The system distribution network board is configured using the softkeys.

To do this, first ensure that the monitor is switched off for at least 20s. Now press the keys labelled ⊓ or (Cal Mark) and ⊠ or (Suspend) simultaneously, then switch the monitor on whilst keeping the buttons pressed. Hold pressed until the prompt tone is heard. The CRT adjustment grid now appears on the screen.

Enter the SDN configuration mode by pressing ⊟ or (Patient Data) key and the following display will appear:

SYSTEM

NETWORK TEST (Cal Mark) ⊓   Press to select branch connection information

FACTORY DATA (Stop) STOP   Press to select sensitivity, R/Y or INOP alarms, alarm mode and arrhythmia on/off.

ECHO (Overview) ⬤   Press to initiate test - comprises of a 500 TEST word message transmitted to the SDN board (performed in the factory only)

(Patient Data) ⊟   ...

BACK TO SETUP (Record) ⧉   Press to return screen to grid display

When the NETWORK TEST softkey is pressed the following display appears:

```
                  NEXT BRANCH    (Cal Mark)  ⊓  Press for next branch
                                                            (up to 32)
   BRANCH   0                    (Stop) STOP
   28    001C
                                 (Overview) ⬤

                                 (Patient Data) ⊟

         BACK TO SETUP           (Record) ⧉..  Press to return softkeys
                                                      to SYSTEM display
```

Pressing the **NEXT BRANCH** softkey advances the display to the next branch in the network upto the maximum number of 32 branches. The information in the center of the screen indicates the branch being observed and the identity of the downstream instrument (in this case a 78504A Patient Information Center - see following "Instrument Identity"). The second entry (001C) encodes the instrument status (see following "Instrument Data Transmission Errors" and "Instrument Status Word").

Pressing the FACTORY DATA softkey gives the following display;

FACTORY DATA SYSTEM

AL CONF =RYI (Cal Mark) ⎍   Select sensitivity RY, RI or RYI
                                       alarm configuration

AL MODE =AUTO (Stop) STOP   Select either AUTO or DEMAND for
                                       alarm display †

AR WAVE=ON (Overview) ⬤   Select on or off arrhythmia
                                       delayed ECG wave
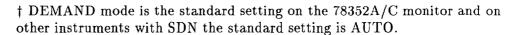
(Patient Data) ⌨   . . .

STORE CONF (Record) ⬚   Press to store and return
                                       display to previous
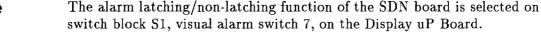
Pressing the **ECHO TEST** softkey clears the display of all other functions and only the
words **ECHO TEST** are left on the screen. This function is performed in the factory during
service checks and a 500 word message is transmitted to the SDN board for processing and
re-transmission back to the board testing device.

Note	† DEMAND mode is the standard setting on the 78352A/C monitor and on other instruments with SDN the standard setting is AUTO.

Note	The alarm latching/non-latching function of the SDN board is selected on switch block S1, visual alarm switch 7, on the Display uP Board.

Instrument Identity

YY	Instrument	ID no.
03	78534A	
28	78504A	1
48	78504A	2
68	78504A	3
88	78504A	4
A8	78504A	5
C8	78504A	6
2A	78508A	1
4A	78508A	2
6A	78508A	3
8A	78508A	4
AA	78508A	5
CA	78508A	6

Instrument Data Transmission Errors

```
BIT
7 6 5 4 3 2 1 0
1 . . . . . . .     False SPS Event Flag
  1 . . . . . .       Fatal Control Error Flag
    1 . . . . .         Recoverable Control Flag Error
      1 . . . .           Physical Data Error Flag
        1 . . .             Logical Data Error Flag
          1 . .               Poll Cycle Overflow Flag
            1 .                 System Cycle Failure Flag
. . . . . . . .                 No Error
```

Instrument Status Word

```
BIT
7 6 5 4 3 2 1 0
  X . . . . .     Self Test State (=1 during Self Test)
    X . . . .     Configuration State
    0 . . . .     Autopoll
    1 . . . .     SDN
      X . . .     DLC Line State
      0 . . .     Offline
      1 . . .     Online
        X . .     System Cycle State
        0 . .     Local
        1 . .     Network
          X X     Start/Restart Indicators
          Z .     Starting = 1
            Z     Restarting = 1
```

Binary to Hex Conversion Table

Binary	Hex
0 0000	0
0 0001	1
0 0010	2
0 0011	3
0 0100	4
0 0101	5
0 0110	6
0 0111	7
0 1000	8
0 1001	9
0 1010	A
0 1011	B
0 1100	C
0 1101	D
0 1110	E
0 1111	F
1 0000	10

1d

Jumpers & Switch Programming

Jumpers & Switch Programming for all Boards
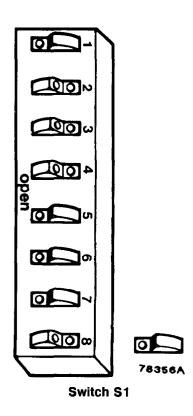
Mother Board: 78353-66501† and 78354-66501

Switches S1 and S2 on the Mother board are accessible when the top cover and parameter boards are removed.

Programming Switch S1

The Switch functions are shown below:

Conditions when switch closed.

1. Aux alarm to X10C/18 (78353-66552 PAT Board only)

2. +5V buffered from A19 to X10C/18 (OPEN = No Trend)

3. RESET signal is routed to X19 pin 14

4. RESET signal is routed to System - connector X91 pin 13

5. No contact

6. ICU alarm volume, possible to turn alarm volume down to zero

7. QRS tone for Japan (switch closed for option Z02)

8. Standard QRS tone (OPEN for option Z02)

78356A

Switch S1

Note	Either 2 or 1 must be open
👆	The QRS tone is not available on the 78356A monitor. Switches S1-7 and 8 should OPEN.

Note	†78354-66501 board replaces 78353-66501.
👆	If replacement board is ordered check that the Revision number of the board is B-2513, C or greater. If it is not then for monitor 78834A Opt A22 only, connect pin 11 on X83 to pin 6 on X4 (see wiring diagram). This is already done on boards 78354-66501 with Revision B-2513, C or greater.
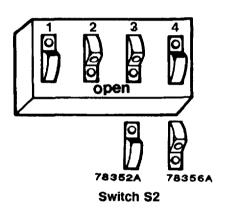
Programming Switch S2

This switch controls which parameter wave is present at the phone jack output on the rear panel.

Condition when switch closed.

1 Not connected

2 Parameter wave from X10C

3 Parameter wave from X10B

4 Parameter wave from X10A
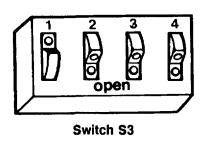
Note
Standard settings are listed in summary table opposite.
Switches 4 should be in the CLOSED position to get the ECG wave on limited I/F output. If this is *altered* the label on the side panel should be changed.
The parameter wave options are not available on the 78356A monitor. Switches S2-2 and 3 should be open.

Switch S2

Programming Switch S3

Switch S3 is located on the Extender Board.

Switch S3
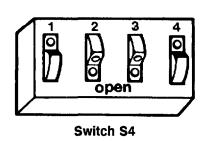
1 OPEN: No parameter wave from Mother Board
  CLOSED: Parameter wave from Mother Board

2 Parameter wave from Y/X6C} S1

3 Parameter wave from Y/X6B} must be

4 Parameter wave from Y/X6A} **OPEN**

Note
Standard setting is SI CLOSED, S2/S3/S4 OPEN.
S1 is OPEN if 2 or 3 or 4 switch are CLOSED.
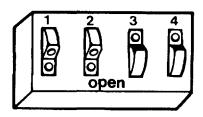
Programming Switch S4

Switch S4 is located on the Extender Board and configured according to the instrument and option:

Switch S4

78354A #A22, #A23		78834A #A22	
1 CLOSED }	K4 to	1 OPEN }	K5 to
2 OPEN }	Keyboard	2 CLOSED }	Keyboard
3 OPEN }	Slot	3 OPEN }	Slot
4 CLOSED }	code-2	4 OPEN }	code-3

All other options:

1 OPEN }	no K
2 OPEN }	to Keyboard
not used }	Slot is
not used }	not used

Summary of S1 and S2 switch positions for 78354-66501 Mother Board:.

S1	Function when Switch closed	78352A 78352C	78353A	78832A	78833A	78833B	78353B 78354A/C 78834A/C	78356A
1	Aux alarm	OPEN	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN
2	+5V Buffered	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
3	Reset to X91-13(Ltd.I/F)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
4	Reset to X19-4(alrm lmp)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED
5	No contact	-	-	-	-	-	-	-
6	ICU alarm vol. zero	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN
7	Japan QRS tone(Z02)	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN
8	Std. QRS tone	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN

S2								
1	No contact	-	-	-	-	-	-	-
2	Param. wave from X10C	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN
3	Param. wave from X10B	CLOSED	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN
4	Param. wave from X10A	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN

Blatt von alte Seite 1-42 hier einfügen
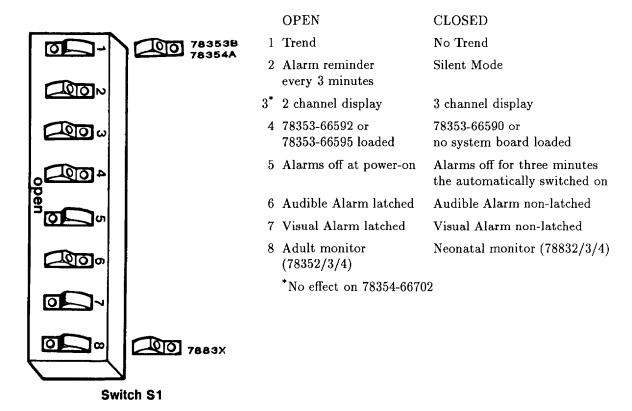
Figure 1d-1. Location of A1/S1,S2 and A4/S3,S4

Display uP Board 78353/4-66502, 78354-66602 and 78354-66702

Jumpers: Ju2 on the Display uP board is set at 0 ohm.

Programming Switch S1
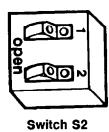
Switch S1 on the Display uP board is accessible when the top cover and the left side cover have been removed. It consists of eight mini switches. The functions of these switches are shown below.

	OPEN	CLOSED
1	Trend	No Trend
2	Alarm reminder every 3 minutes	Silent Mode
3*	2 channel display	3 channel display
4	78353-66592 or 78353-66595 loaded	78353-66590 or no system board loaded
5	Alarms off at power-on	Alarms off for three minutes the automatically switched on
6	Audible Alarm latched	Audible Alarm non-latched
7	Visual Alarm latched	Visual Alarm non-latched
8	Adult monitor (78352/3/4)	Neonatal monitor (78832/3/4)

*No effect on 78354-66702

Switch S1

On models before 1st June 88, there are two more sets of switches. These are replaced by jumpers on current models:
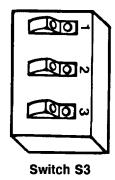
Programming Switch S2

Switch S2 on the display microprocessor board is accessible when the top cover and the left side cover have been removed. It consists of two miniswitches and in older boards was used to program for single or multi- channel (2 or 3 channel) processing and display. Both switches were left closed in later boards.

Switch S2

Programming Switch S3 (78354-66502 board only)

Switch S3 is accessible when the top cover and left side cover have been removed. It consists of three miniswitches to change the ROM capacity. On later boards switches were always left closed.

Switch S3

1 x 32K x 8EPROM(U26)

1 x 8K x 8EPROM(U50)

The diagram below shows layout of board prior to June 88.
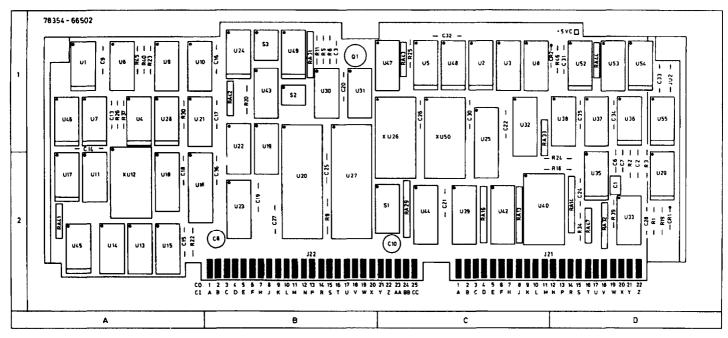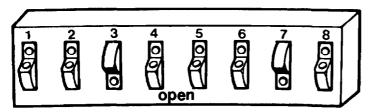
Figure 1d-2. Location of A2Jul2, A2/S1, S2, S3 (78354-66502)

Interpolation Board 78353-66503
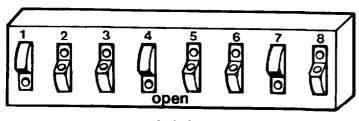
Programming Switch S1

Switch S1 on the interpolation board is programmed at the factory and controls the segmentation of the display field. The switch positions are as follows:

These positions *should not be changed*

Positions for 78353A/3B/4A, 78833A/3B/4A (channel 2 in center of screen)
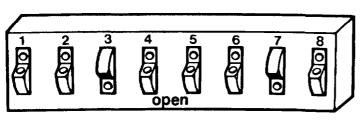
Switch 1

Switch 1-4 positions for 78832A (channel 2 in lower half of screen)

Programming Switch S2 (not on Revision C boards and higher)

Switch S2 is also programmed at the factory and configures the circuits for use with 8Kx8 EPROM.

The Switch positions are as follows:

SWITCH S2

Switches 1, 4, 5 and 6 not connected.

These positions *should not be changed*

Jumpers

Jumpers 1 to 8 on the interpolation board are used to configure the circuits for 3 channel operation. The standard connection, which **should not be changed,** is shown below.

o- - -o Ju1 not connected   'Offset channel 3' signal is routed through U4C

o———o Ju2 connected   'Chip select wave 3' signal connected to U12A

o- - -o Ju3 not connected   +5V signal connected to U44B

o- - -o Ju4 not connected   'Blank 3' signal connected to Video Intensity Circuits (U33)

o———o Ju5 connected

o- - -o Ju6 not connected   Capacitor C26 optional

```
    o-----o connected   }   EPROM on A3     o-----o not connected}on   A3
        Ju7             }   78353-66502        Ju7              }78354-66502
                        }   uP Display                          }uP Display
    o- - -o not connected }  Board           o-----o connected   }Board
        Ju8             }                      Ju8              }
```

The locations of S1, S2 and Ju1-8 are shown below:
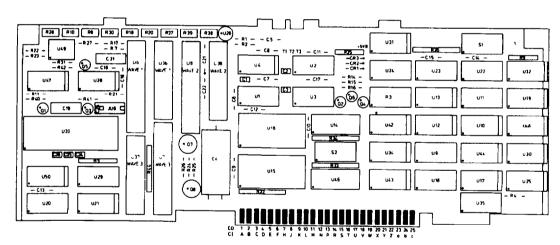
Figure 1d-3. Location of A3/S1, S2 and A3Ju1 - A3Ju8 (pre-Rev. C boards)
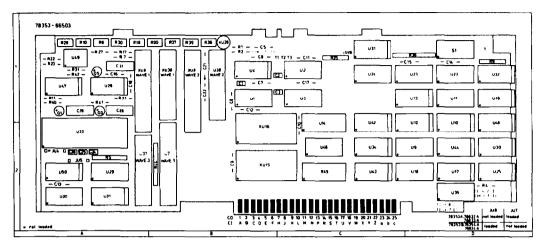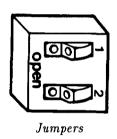
Figure 1d-4. Location of A3/S1 and A3Ju1 - A3Ju8 (Rev. C boards)

Audio Board 78353-66511/12

Jumpers

	OPEN	CLOSED
1	ECG wave from System board via yellow wire	ECG wave from ECG board
2	not used	not used

Jumpers
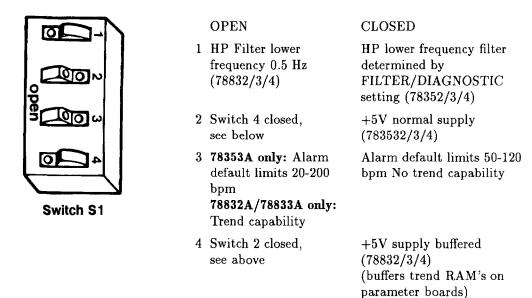
Jumper Ju1 - Connected

ECG Board (3-lead) 78832-66522

Programming Switch S1

Switch S1 on the ECG board is accessible when the top cover and the ECG board have been removed.

The switch functions and standard positions are shown below:

Switch S1

	OPEN	CLOSED
1	HP Filter lower frequency 0.5 Hz (78832/3/4)	HP lower frequency filter determined by FILTER/DIAGNOSTIC setting (78352/3/4)
2	Switch 4 closed, see below	+5V normal supply (783532/3/4)
3	**78353A only:** Alarm default limits 20-200 bpm **78832A/78833A only:** Trend capability	Alarm default limits 50-120 bpm No trend capability
4	Switch 2 closed, see above	+5V supply buffered (78832/3/4) (buffers trend RAM's on parameter boards)
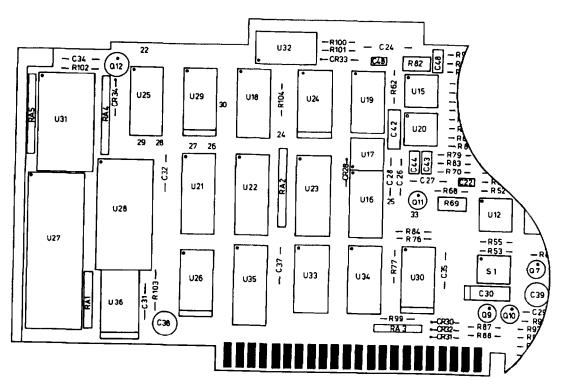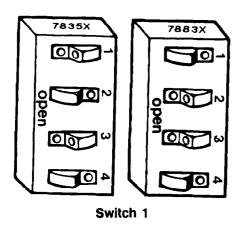
Figure 1d-5. Location of A22/S1

ECG Board (Full lead) 78354-66522, 66722

Switches S1, S2 and S3 on the ECG Board are accessible when the top cover and the board is removed.

Switch 1
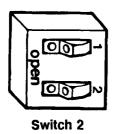
	OPEN	CLOSED
1	HP Filter lower freq.= 0.5Hz	DIAG = 0.05Hz
2	Trend	No Trend
3	Must be open for ST board 66722 (7835X only)	Standard ECG
4	No Trend	No Trend

Switch 2
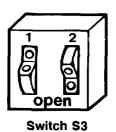
	OPEN	CLOSED
1	50Hz Notchfilter	60 Hz Notchfilter
2	OR	ICU/Arrhythmia bandwidth

Switch S3
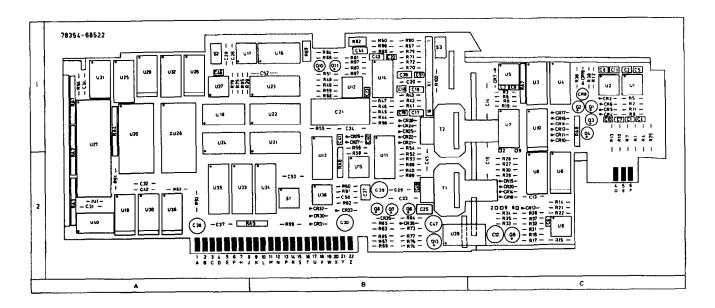
	OPEN	CLOSED
1	ICU/Arrhythmia bandwith	OR
2	OR	ICU/Arrhythmia bandwidth

Jumpers
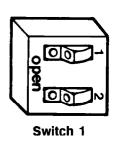
Jumper Ju1 is used for board testing at the factory. Ju1 is **CLOSED** for normal operation and **OPEN** for factory test only.

Pressure Board 78353-66532/4

Programming Switch S1
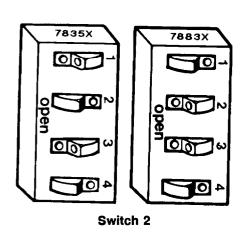
Switch S1 on the pressure board is accessible when the top cover and the pressure board have been removed. The switch configures the circuits for single or dual pressure monitoring and units of pressure measurement.

Switch 1

	OPEN	CLOSED
1	P1/P2 on one setup key	P1/P2 on two separate setup keys
2	kPa,	mmHg

Programming Switch S2

The switch functions of S2 are shown below:

Switch 2

	OPEN	CLOSED
1	OPEN	Normal 5V supply
2	CLOSED	(no trend option) - 78353/4
1	CLOSED	Buffered 5V supply
2	OPEN	(trend option) - 78833/3
3	OPEN	Use 2 K x 8 RAM
4	CLOSED	(no trend option) - 78353/4
3	CLOSED	Ues 8 K x 8 RAM
4	OPEN	(trend option) - 78833/4
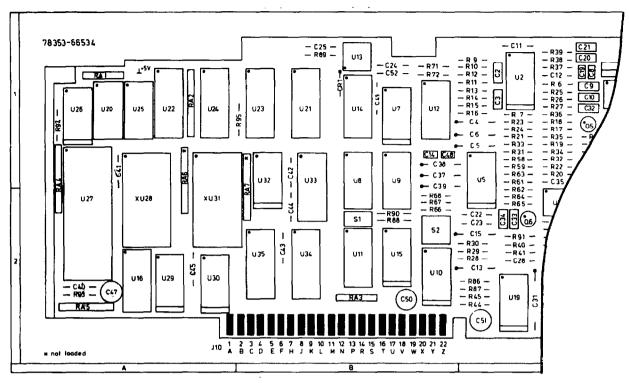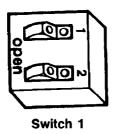
Figure 1d-6. Location of A34/S1, S2

How to change the pressure scaling mode:

1. Turn the Monitor off for at least 1 minute

2. Depress the alarm reset △ or (Silence/Reset) key and the CAL softkey simultaneously and switch the Monitor on. Hold these buttons depressed until the test waveforms appear.

3. Press the P1 setup button

4. Press the ALARM softkey and cycle through until "alarms off" appears in the display.

5. Press and hold the unlabelled ⟁ or (Patient Data) softkey for at least 10 seconds

6. Switch the Monitor off, and then on again.
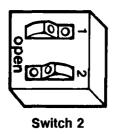
NIBP Board 78354-66535 and 78352-66535

Switches and jumpers are accessible when the top cover and the NIBP board have been removed.

Switch 1
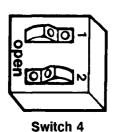
	OPEN	CLOSED
1	kPa	mmHg
2	Service Mode	Normal Operating Mode

Switch 2

1	OPEN	Buffered +5V supply
2	CLOSED	for trend (#E10)
1	CLOSED	Normal +5V supply
2	OPEN	(no trend)

Switch S3 is not used

Switch 4

1	OPEN	32K x 8 EPROM
2	CLOSED	(trend)
1	CLOSED	16K x 8 EPROM (no trend)
2	OPEN	(no trend)

Note

Switch S4 is only loaded on 78354-66535 Rev B boards and higher and on 78352-66535 Rev. A boards.

Jumpers

Note: Jumpers Ju1 and Ju2 are only loaded on Rev. A boards.

	Standard	#E10	Function: / distinguishes between
Ju1	not loaded	loaded	32K x 8 EPROM
			or
Ju2	loaded	not loaded	16K x 8 EPROM
Ju3	loaded	not loaded	16K x 8 RAM
Ju4	not loaded	loaded	32K x 8 RAM
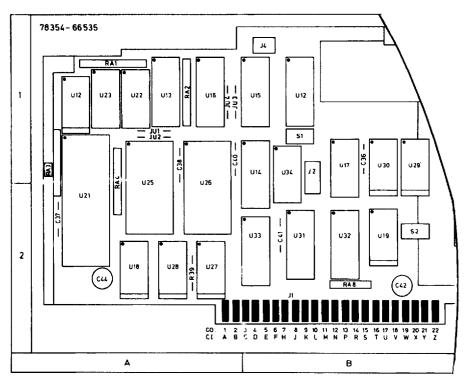
Figure 1d-7. Location of A35/S1, S2 and A35/Ju1-4 (78354-66535 Rev. A boards)
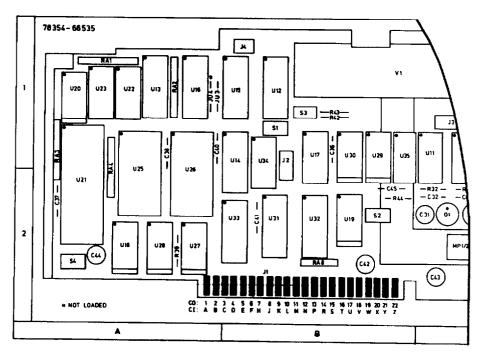
Figure 1d-8. Location of A35/S1, S2, S4 and A35/Ju3, Ju4

(78354-66535 Rev. B boards and higher and 78352-66535 Rev. A boards)

CO2/O2 Board 78354-66540 and 78356-66540
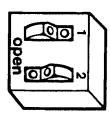
Switches S1,S2 are accessible when the top cover and the CO2/O2 board have been removed.

Note   In later instruments, 78356-66540 replaces 78354-66540.

Programming Switch S1 (78354-66540 only)

	OPEN	CLOSED
1	No Resp. Rate from CO_2 (OPEN for A10+CO_2, A19, C18; A18, C18)	Resp. Rate displayed from CO_2 signal A12+CO_2/CO_3, A06, CO3
2	kPa (Opt. E22)	mmHg
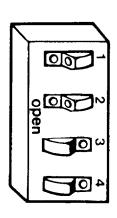
Programming Switch S1 (78356-66540 only)

	OPEN	CLOSED
1	Not used	Not used
2	78256A only	All other instruments
3	No Resp. Rate from CO_2 (OPEN for A12/CO_2)	Resp. Rate displayed from CO_2 signal
4	kPa (Opt. E22)	mmHg
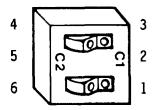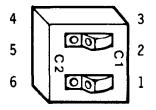
Programming Switch S2

+5V Buffered } Trend

+5V Normal } No Trend

Note: 8K RAM is Std
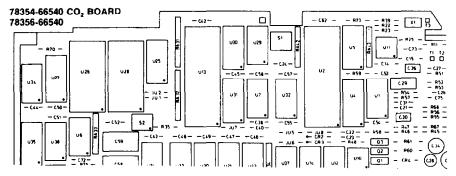
Figure 1d-9. Location of A40/S1, S2 and A40 Ju1-Ju7

O2 Board 78356-66541
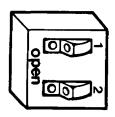
Switch S1 is accessible when the top cover and the O2 board have been removed.

Note   In later instruments, 78356-66541 replaces 78354-66541.

Programming Switch S1 (78356-66541 only)

	OPEN	CLOSED
1	Not used	Not used
2	78356A only	all other instruments
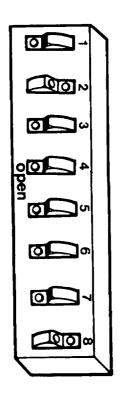
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Figure 1d-10. Location of A41/S1

PAT Board 78354-66552
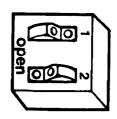
Programming Switch S1

	OPEN	CLOSED
1	Not used	Not used
2	——	4MHz from Mother Bd.
3	4MHz from Mother Bd.	——
4	Not used	Not used
5	Aux CO_2 mmHg	Aux CO_2 kPa
6	Aux PRESS mmHg	Aux PRESS kPa
7	2K RAM	8K RAM (Trend)
8	8K RAM (Trend)	2K RAM

There is no S2

Programming Switch S3

1	CLOSED	
2	OPEN	+5V normal (no Trend)
1	CLOSED	
2	CLOSED	+5V Buffered (Trend)
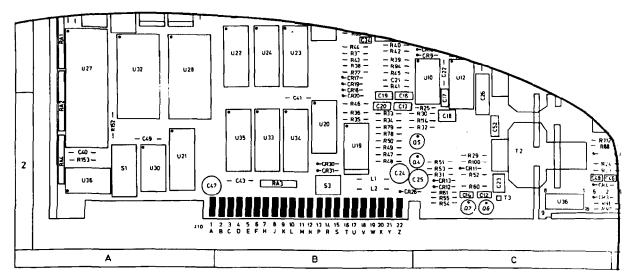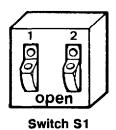
Figure 1d-11. Location A52/S1, S3

Temperature Board 78353-66554

Programming Switch S1

Switch S1 on the temperature board consist of two mini switches, only one of which is currently used.

When switch 1 is open, temperature signals T1 and T2 are both processed in the digital circuits.

When switch S1 is closed, temperature signal ΔT (=T1- T2) is processed in the digital cicuits.

Switch 2 is not used.

Switch S1
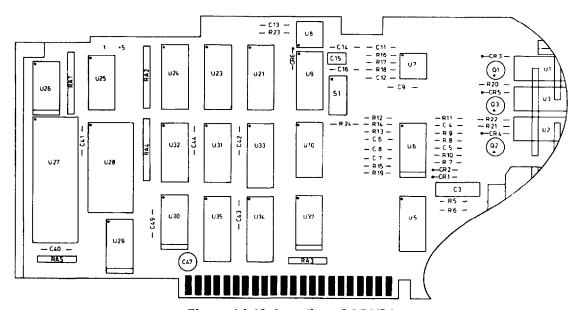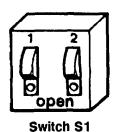
Figure 1d-12. Location of A54/S1

Temperature Board 78354-66554

Programming Switch S1

Switch S1 on the temperature board consists of two mini switches, only one of which is currently used.
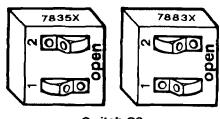
When switch 1 is open, temperature signals T1 and T2 are both processed in the digital circuits.

When switch is closed, temperature signal ΔT ($=T1-T2$) is processed in the digital circuits.

Mini switch 2 is not used.

Switch S1

There is no Switch S2

Programming Switch S3

1 OPEN	+5V normal
2 CLOSED	(no Trend) - 78352/3/4
1 CLOSED	+5V Buffered
2 OPEN	(Trend) - 78833/4

Switch S3

Figure 1d-13. Location of A54/S1, S3

Respiration Board 78832-66562

Programming Switch S1

Switch S1 on the Respiration board is accessible when the top cover and the respiration board have been removed. The switch functions and standard positions are shown below:

Switch 1

	OPEN	CLOSED
1	+5V supply normal (Switch 2 CLOSED)	+5V supply buffered (Trend) -78832/3/4
2	+5V supply buffered (Switch 1 CLOSED)	+5V supply normal (no Trend) -78352/3/4
3	Trend capability	no Trend
4	Not used (must be OPEN)	

Jumpers

Connection of jumpers Ju5 and Ju6 on the respiration board depends on the type of RAM used for U18.

■ For type 6116 RAM jumper Ju6 is connected and Ju5 is not connected.
■ For type 8464 RAM jumper Ju5 is connected and Ju6 is not connected.
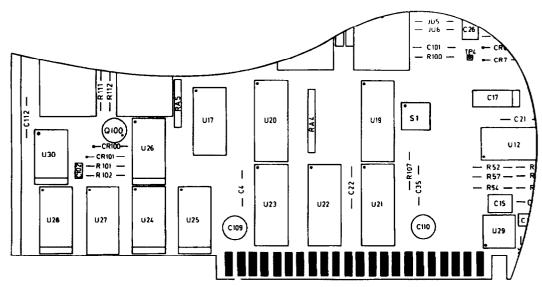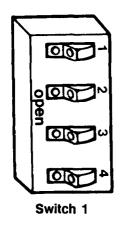
Figure 1d-14. Location of A62/S1, A62Ju5, A62Ju6

tcpO2/CO2 Board 78834-66572

Switch S1 on transcutaneous board is configured as follows;

	OPEN	CLOSED
1	tcpO2 enabled	tcpO2 disabled
2	tcpCO2 enabled	tcpCO2 disabled
3	correction enabled	correction disabled
4	mmHg	kPa

Switch 1
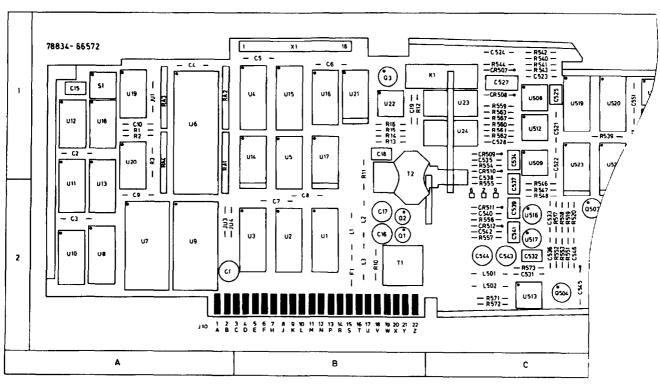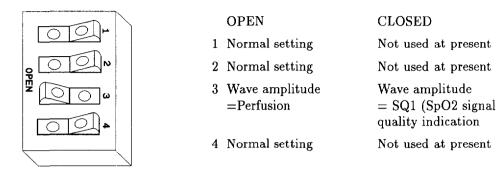
Figure 1d-15. Location of A72/S1

SpO2 Board 78354-66510

There is only one switch on the Oxygen saturation board. It is configured as follows:

	OPEN	CLOSED
1	Normal setting	Not used at present
2	Normal setting	Not used at present
3	Wave amplitude =Perfusion	Wave amplitude = SQ1 (SpO2 signal quality indication
4	Normal setting	Not used at present
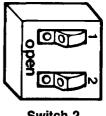
System Board 78353-66590

Switch 1 on the System Board 78353-66590 is configured as follows:

Switch 1

	OPEN	CLOSED
1	Switch S2 CLOSED see below	selects ECG with variable gain from system board
2	Switch 1 CLOSED see above	selects ECG with variable gain from ECG board
3	78832/3/4 (selects beat-to-beat HR)	78352/3/4 average HR)
4	78352/3/4 No Resp. parameter	78832/3/4 With Resp. parameter
5	78352/3/4 Switch 6 CLOSED see below	78832/3/4 Beat-to-beat HR to output
6	78832/3/4 Switch 5 CLOSED (see above)	78352/3/4 HR DC to output
7	78352/3/4	78832/3/4 Resp. wave to pin J
8	78352/3/4	78832/3/4 HR beat-to-beat to X92 pin N

Switch 2 on the System Board 78353-66590 is configured as follows:

Switch 2

	OPEN	CLOSED
1	Not used	Not Used
2	Normal operation	auxiliary alarm to output (service switch)
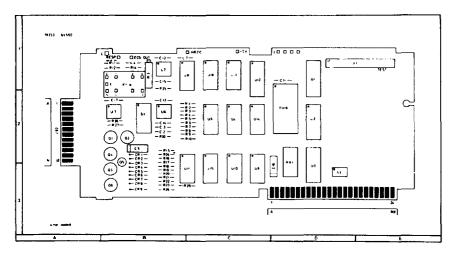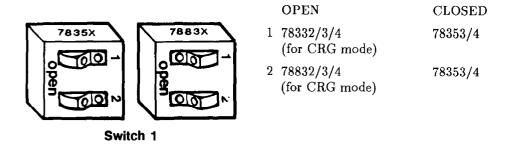
Figure 1d-16. Location of A90/S1, S2

System Board 78353-66592

Switch 1 on the System Board 78353-66592 is configured as follows:

Switch 1

	OPEN	CLOSED
1	78332/3/4 (for CRG mode)	78353/4
2	78832/3/4 (for CRG mode)	78353/4
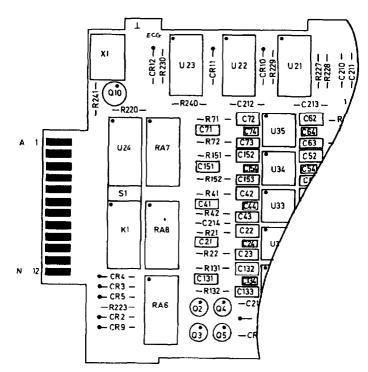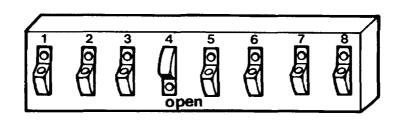
Figure 1d-17. Location of A92/S1

RS-232C Interface Board 78354-66598

Prior to November 1988, Switch S1 on the RS-232C Interface Board 78354-66598 was configured as follows:

```
Switches 1-4 bed              Switches 5-6 baud rate
selection number#             selection for channel 2
```



```
          Bed     Switch
          No      1   2   3   4   5   6   7   8=CLOSED: Op. mode
          -       C   C   C   C   |   |   |      OPEN: Fact. mode
          1       O   C   C   C   |   |   |
          2       C   O   C   C   |   |   |
          3       O   O   C   C   |   |   ---7= OPEN: Service test
O=OPEN    3       O   O   C   C   |   |      CLOSED: Op. mode
C=CLOSED  4       C   C   O   C   |   |
          5       O   C   O   C   O   O......1200 baud
          6       C   O   O   C   C   O......2400 baud
          7       O   O   O   C   O   C......9600 baud
          8       C   C   C   C   C   C.....19200 baud (std HP rate)
          9       O   C   C   O
          10      C   O   C   O
          11      O   O   C   O
          12      C   C   O   O
          13      O   C   O   O
          14      C   O   O   O
          15      O   O   O   O
```

From the end of November 1988 new RS-232C software, introduced to enable use with the new SpO2 parameter, uses switch 1/4 to select and deselect alarm recording.

S1/4 Open - Alarm recording off / S1/4 Closed - Alarm recording on

It is only now possible to set bed numbers up to 7, using switches S1/1, 1/2 and 1/3.
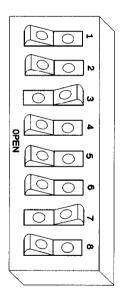
#For standard setting with all software, mode switches 1-3 and 5-8 are CLOSED.

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Figure 1d-18. Location of A98/S1

NIBP Board (78352-66538)

There is only one switch on the new NIBP Board. It is configured as follows:

	OPEN	CLOSED
1	mmHg	kPa
2	Adult only	Adult/Ped./Neo.
3	Board slot 6	Board slot 1 to 5
4	Repeat 15 min. (ICU)	Repeat 5 min. (OR)
5	Diast. corr. off	Diast. corr. on
6	Default mode auto.	Default mode manual
7	Trend	No trend
8	No trend	Trend

1e

Error Codes and Messages

Introduction

This chapter provides all the Error Codes and Error Messages for the 78XXX series Patient and Neonatal Monitors.

Error Codes

Error codes can be displayed at any time during instrument operation or during the Power-on self-test program. An error code may appear in the numeric field of a parameter, when related to this parameter, or in the common message field when related to the instrument generally. The error code is latched when both the Master Alarm capability and the specific parameter alarm capability are ON.

The error codes are in alphanumeric form in three parts. <EYX>

The error code always begins with E. Y can be any number from 0 to 6 and represents the location of the error as shown in table below.

Error Code Key - Fault Location

Y=	Error Location
0	Instrument/Display/General
1	Parameter in slot 1 (X10A)
2	Parameter in slot 2 (X10B)
3	Parameter in slot 3 (X10C)
4	Parameter in slot 4 (X6A)
5	Parameter in slot 5 (X6B)
6	System Board

X is a letter or number representing a more detailed error diagnosis. Those currently in use are shown in Table 1e-1.

Table 1e-1. Error Code Key - Fault Diagnosis

X=	Interpretation	Cause/Remedy
1	Data error	Internally stored data lost
2	Trend error	Trend data lost
3	Communication error	Comm. with display lost
4	Hardware malfunction	
5	EAROM data error	Replace EAROM
0	Parameter malfunction - the parameter board indicated by the first error code has a fault.	Replace parameter board or troubleshoot down to componentlevel.
F	Parameter missing after power fail < 15 s. A comparison has been made between parameters displayed before and after power fail and one or more is missing.	Ensure that parameter board is securely connected to the mother board and input connection board.

Hence an example of an error code is: <E32>

which means that there is a RAM fault *(trend data lost)* on the parameter board which is in slot 3 (connector X10C). RAM1 should be replaced.

Two other error codes which might occur are:

<EY0>   indicates a parameter is not communicating correctly. In this case ensure that the parameter board is properly connected then switch the instrument off. Switch on again after 20s; if error code is still displayed replace the parameter board.

<EY1>   a suspected data error has been detected and a parameter or the instrument may have reverted to default settings (the settings present when the instrument is switched on). It is only necessary to check that these settings are as required, then press Alarm Reset to cancel the error code display and audible alarm.

ECG (783XX series) Error Codes:

	Error	Cause/Remedy
<EY1>	Data error	Data invalid
<EY2>	Trend error	Trend data lost

ECG (788XX series) Error Codes:

	Error	Cause/Remedy
<EY1>	Data error	Data invalid
<EY2>	Trend error	Trend data lost

Pressure Error Codes:

	Error	Cause/Remedy
<EY1>	Data error	
<EY2>	Trend error	
<EY5>	EAROM checksum error	
<EY6>	RAM too small	

NIBP Error Codes:

	Error	Cause/Remedy
<EY0>		No error detected
<EY1>	Data error	Data invalid
<EY2>	Trend error	Trend data lost
<EY3>	Comm error	Communication with display lost
<EY4>	not used	
<EY5>	Faulty EAROM data	
<EY6>	Overpress error	Overpressure switch on
<EY7>	Inflation error	
<EY8>	Safety error	Safety timer overflow
<EY9>	Deflation error	
<EYA>	Zero errror	Zero offset value not in range
<EYB>	}	
<EYC>	}not used	
<EYD>	}	
<EYE>	Production test error	

Note

Y = 4 (slot X6A) in 78354A; Y = 1 (slot X10A) in 78352A

CO2 Error Codes:

	Error	Cause/Remedy
\<E41\>	Data lost	
\<E42\>	Trend data lost	CO2 trend data lost.
\<E43\>	Sensor malfunction	Motor or heater defect.
\<E44\>	Instrument not correctly calibrated	Recalibrate (CO2>150mmHg or CO2<-2mmHg)
\<E45\>	EAROM error	Cal. constants, altitude etc.
\<E46\>	Wrong RAM	Trend option uses 8K RAM, non-trend uses 2K RAM. Change RAM or switching.

O2 Error Codes:

	Error	Cause/Remedy
\<EY1\>	Data lost	O2 related data is incorrect
\<EY2\>	Trend data lost	O2 trend data lost.
\<EY5\>	EAROM error	Exchange EAROM
\<EY6\>	Wrong RAM	Trend option uses 8K RAM, non-trend uses 2K RAM. Change RAM of switching.

Temperature (783XX series) Error Codes:

	Error	Cause/Remedy
\<EY1\>	Data error	
\<EY2\>	Trend data lost	
\<EYE\>	Reference error	Built in reference temperature out of range/malfunction.

Temperature (788XX series) Error Codes:

	Error	Cause/Remedy
\<EY6\>	ADC error	ADC defect
\<EY7\>	ADC test failed	ADC defect
\<EY8\>	ADC not ready	ADC defect
\<EY9\>	ADC output for reference	Relay defect? R out of range

Respiration Error Codes:

	Error
\<EY6\>	ADC error
\<EY7\>	Integrator error

tcpCO2/O2 Error Codes:

	Error	Cause/Remedy
\<EY1\>	Saved data lost	Some CO2/O2 related data is incorrect.
\<EY2\>	Trend data lost	Some CO2/O2 trend data is lost.
\<EY3\>	Communication with display disturbed.	Failure with synchronization.
\<EY4\>	Hardware error	Possible processor hardware malfunction. (Processor is reset too often by watchdog circuit).
\<EY5\>	EAROM error	Exchange EAROM.
\<EY6\>	Sensor temperature out of range.	Sensor defect, cable break in sensor, temp. control circuit defect.
\<EY7\>	Floating section error	Defect in floating section of board or sensor: synchronization of data tranmission disturbed, one or more transmitted values out of range, measured sensor temperatures $>46°C$ *Note:* If error 7 occurs the power to the floating section is switched off. To release the error the monitor must be switched off and on again.
\<EY8\>	Barometer error	Check if Barometer Bd is present and connected correctly. Measured barometric pressure out of range.
\<EY9\>	Software error	e.g. division by zero.
\<EYA\>	Non-allowed user operation	Reconfigure switching. Board switches should only be changed when monitor is off.
\<EYB\>	tcpO2 battery discharged	Leave monitor switched on for ˜24hr. If error remains check battery and/or battery charge circuit.

Note

Either a correct transducer or test jig (see Volume 1, Chapter 2) must be connected to enable error codes to be displayed. Only the most important error (priority) will be displayed if more than one error is present. The next significant error will be displayed as soon as the previous priority error has been corrected.

SpO2 Error Codes:

	Error	Cause/Remedy
<EY1>	Data error	Malfunction of instrument or external interferance (e.g. power surge, defibrillator).
<EY2>	Trend data lost	Memory of old data, stored for showing trend, is lost. Replace battery.
<EY3>	Communication with display lost.	Problem with motherboard/card interface. Re-setting machine may cure, but probably hardware malfunction requiring technician.
<EY4>	Hardware malfunction	This error occurs only during power-up. Try switching mains power on and off. However, probably hardware malfunction.
<EY5>	Communication with floating section of board disturbed	Try resetting machine. Check setting of Switch S2 (see"JUMPERS "& SWITCH PROGRAMMING" in Chapter 1 of this manual). However, probably hardware malfunction.
<EY6>	Transducer malfunction	Replace transducer.
<EY9>	Software Malfunction	Re-set machine. *Note:* This can be a sign of an impending hardware failure.

SDN Error Codes:

	Error	Cause/Remedy
<E61>	Data error	
<E65>	Faulty EAROM data	
<E66>	Faulty I/O RAM	
<E67>	Faulty RAM 2	
<E68>	Faulty SIC RAM	
<E69>	Faulty Signature RAM	
<E6A>	Autopoll test not successful	
<E6B>	TB2 test not successful	
<E6C>	LBN invalid	
<E6D>	More than one PBU at the same branch	

780 Annotating Interface Error Codes:

	Error	Cause/Remedy
<E60>	No error detected	
<E61>	Data error	Data invalid
<E63>	Communication error	Communication with display lost
<E65>	EAROM error	EAROM data lost
<E66>	UART error	UART error
<E6F>	Test indicator	

Error Messages

The only error message which might appear is **SYSTEM FAILED.** This means that the instrument is programmed to operate with a 780 system board but the system board is not loaded or has failed.

If the system board is missing it should be loaded, if it has failed it should be replaced. If the instrument is to be used without a system board, programming switch S1 on the display uP board must be reprogrammed (see "Display uP Board 78353/4-66502, 78354-66602 and 78354-66702" in Chapter 1d).

Defective Components On Display uP And Interpolation Boards

If the display remains blank when the Monitor is switched on, it is possible to check for defective components on the Display uP Board (A2) or the Interpolation Board (A3).

78353A,78832A/3A: By measuring the pin signals at A2U32-if any of the pins in the table below is high, this indicates *possible* failure of the corresponding component in the right-hand column.

78352A/3B/4A and 78833B/34A: Possible defective components are indicated at the bottom left corner of the screen by letters A-K.

*A2U32 pin #

78352A, 78353B, 78354A, 78833B, 78834A	78353A, 78832A, 78833A*	Possible Defective Component
A	2	A2U16, numerics RAM
B	5	A2U26, ROM
C	2, 5	A2U26, EPROM
H	9	A2U25, RAM
I	9, 2	A2U25, RAM
J	9, 5	A2U40, shared RAM, also check parameter boards.
K	2, 9, 5	A3U15, WAVE RAM

2

Schematics

Introduction

Chapters 2a and 2b provide all the schematic information for the 78XXX series Patient and Neonatal Monitors. The Schematic Chapters cover the following:

Chapter 2a   Schematic Diagrams

Chapter 2b   Connection Boards

2a

Schematic Diagrams

Introduction

This section provides schematic diagrams with troubleshooting information. Table 2a-1 provides an index for the schematic diagrams, the A designator for each board part number and the page number reference.

The information in this section is arranged to provide the maximum troubleshooting assistance. The information provided consists of:

1. Schematic diagrams: A functional schematic is provided for each of the operational areas.

2. Component Locator diagrams: Diagrams of component layout for each circuit board, positioned adjacent to the associated schematic diagram.

3. Component grid-location listings: A grid reference frame is drawn around each schematic diagram and component locator diagram. A listing is given of the location of each component related to these grid reference frames.

4. Test waveforms: Waveforms and voltages at the test-points are provided for the most important circuits, at specified test conditions.

5. Replacement Parts Lists: A complete replacement parts list is given for each board on the left hand side of the corresponding schematic.

6. Connection board schematics not shown on the main schematic are to be found in Chapter 2b.

Note	PC board A designators are usually numbered according to the last two digits in the board part number. For example, the Mother Board part number is 78354-66501, so it has an A1 designator.

Organization of Material in Chapter 2a

The Schematic diagrams are presented in order of increasing "A" designator to facilitate ease of location. The appropriate instrument in which that particular board is used in is shown to the right of the schematic.

The Schematic diagrams are located on right-hand foldout pages. Component locator diagrams with grid location listings, replacement parts listings and test-point information are located adjacent to each schematic diagram.

Table 2a-1. Index of Schematics contained in Chapter II

SCHEMATIC	PART NUMBER	A-DESIGNATOR
Wiring Diagrams-3/4 Module / Extender Board		
Mother Board	78354-66501	A1
Display uP Board	78353-66502	A2
Display uP Board	78354-66502	A2
Display uP Board	78354-66602/ -66702	A2
Interpolation Board	78352-66503	A3
Interpolation Board	78353-66503	A3
Power Supply Boards	78351-66506/7	A6/A7
SpO_2 Board	78354-66510	A10
New SpO_2 Board	78354-66520	A10
Audio Board	78353-66512	A12
Lamp Board	78832-66518	A18
Battery Board	78832-66519	A19
ECG Board (Full-lead Analog)	78354-66522	A22(A42)
(Full-lead Digital)	78354-66522	A22(A42)
ECG Board (3-lead)	78832-66522	A22(A42)
ECG Board (Full-lead Analog)	78354-66722	A22(A42)
(Full-lead Digital)	78354-66722	A22(A42)
Pressure Board (Analog)	78353-66532(4)	A32(A34)
(Digital)	78353-66532(4)	A32(A34)
NIBP Board (Analog)	78352-66535	A35
(Digital)	78352-66535	A35
Pump Control Board	78352-66537	A37
New NIBP Board (Analog)	78352-66538	A38
(Digital)	78352-66538	A38
CO2/O2 Board (Motor and Temp)	78354/6-66540	A40
(Digital)	78354/6-66540	A40
Oxygen Board (Analog)	78354/6-66541	A41
PAT Board (Analog)	78353-66552	A52
(Digital)	78353-66552	A52

Table 2a-1. Index of Schematics contained in Chapter II (continued)

SCHEMATIC	PART NUMBER	A-DESIGNATOR
PAT Board (Analog)	78354-66552	A52
(Digital)	78354-66552	A52
Temperature Board	78832-66552	A52
Temperature Board	78834-66552	A52
Temperature Board (Analog)	78353-66554	A54
(Digital)	78353-66554	A54
Temperature Board (Analog)	78354-66554	A54
(Digital)	78354-66554	A54
Respiration Board (Analog)	78832-66562	A62
(Digital)	78832-66562	A62
tcpCO2/O2 Board (Analog)	78834-66572	A72
(Digital)	78834-66572	A72
Barometer Board	78834-66573	A73
780 Non-Ann SystemBoard	78353-66590	A90
780 Ann System Board (Analog)	78353-66592	A92
(Digital)	78353-66592	A92
SDN Board	78353/4-66595	A95
RS232C Board	78354-66598	A98
Keyboard - 3/4 Module	3101-2857	
- Full Module	3131-0485	—

Board Compatibility Chart

The Board Compatibility Chart below indicates which boards may be used in which instruments (depending on instrument configuration):

Table 2a-2. Board Compatibility Chart

Board Type	7835XX							7883XX				
	2A	2C	3A	3B	4A	4C	6A	2A	3A	3B	4A	4C
Motherboard 78353-66501*			o					o	o			
Motherboard 78354-66501*	•	•	•	•	•	•	•	•	•	•	•	•
µP-Disp 78353-66502*			•					•	•			
µP-Disp 78354-66502*	•		•	•	•		•	•	•	•	•	
µP-Disp 78354-66602	•			•	•		•			•	•	
µP-Disp 78354-66702		•				•						•
Interp 78352-66503	•	•										
Interp 78353-66503*			•	•	•	•	•	•	•	•	•	•
SAO$_2$ 78354-66510	•	•			•	•						•
SAO$_2$ 78354-66610		•				•						•
ECG-3 Lead 78832-66522*			•					•	•		o	
ECG-Full Lead 78354-66522*	•	•		•	•	•				•	•	•
SGL/DUAL Pres. 78353-66532(4)*			•	•	•	•			•	•	•	•
NIBP 78352-66535	•	•			•	•						
NIBP 78354-66535*				o								
NIBP 78352-66358		•				•						•
CO$_2$/O$_2$ 78354-66540					•	•						•

* Available as exchange boards.

o Board previously used.

2a-4   Schematic Diagrams

Board Compatibility Chart (continued)

Board Type	7835XX							7883XX				
	2A	2C	3A	3B	4A	4C	6A	2A	3A	3B	4A	4C
CO_2/O_2 78356-66540					•	•	•					•
Oxygen 78354-66541					•	•						•
Oxygen 78356-66541					•	•	•					•
T/P/A 78353-66552*			•									
T/P/A 78354-66552*				•	•	•						
Temp 78832-66552*								•				
Temp 78834-66552*											o	•
Temp 78353-66554*		o										
Temp 78354-66554*	•	•	•	•	•	•				•	•	•
Resp 78832-66562*				•	•	•		•	•	•	•	•
$tcpCO_2/O_2$ 78834-66572										•	•	•
Barometer 78834-66573										•	•	•
780 N-A I/F 78353-66590	•	•	•	•	•	•		•	•	•	•	•
780 A I/F 78353-66592*	•	•	•	•	•	•		•	•	•	•	•
SDN 78353-66595*	•	•		•	•	•				•	•	•
SDN 78354-66595		•				•						•
RS 232 I/F 78354-66598	•	•		•	•	•	•			•	•	•

* Available as exchange boards.

o Board previously used.

Exchange Board Overview

The exchange board overview below indicates the active exchange board revision.

Exchange Board Overview

Board Number	Board Description	Active Revision	Notes
78350-69501	Battery module secondary	B	Operates in 78350B only. 78350A requires rev A bd.
78351-69502	Display	A	Remove software before sending to exchange.
78351-69506	Power supply	F	
78352-69503	Interpolation	C	
78352-69535	NIBP	A	Remove software and solenoid valve before sending to exchange
78352-69538		C	
78353-69502	Display	A	Remove software before sending to exchange
78354-69502		C	
78354-69602		A	
78354-69702		A	
78353-69503	Interpolation	C	
78353-69532	Single Pressure	E	
78353-69534	Dual Pressure	E	
78353-69552	PAT	C	
78354-66552		B	
78353-69592	780 Annotating Interface	C	
78353-69595	SDN Interface	B	
78354-69595		B	
78354-69501	Motherboard	C	
78354-69502	Display	B	Remove software before sending to exchange
78354-69522	ECG (full lead)	D	
78352-69535	NIBP	D	Remove software and solenoid valve before sending to exchange.

Exchange Board Overview (continued)

Board Number	Board Description	Active Revision	Notes
78354-69540	CO_2/O_2	A	Remove software before sending to exchange
78354-69542	ECG (full lead)	D	
78354-69552	PAT	B	
78354-69652		B	
78354-69554	Temperature	A	
78354-69598	RS232	A	
78832-69542	ECG (3 lead)	C	
78354-69722	ECG and ST (full lead)	A	
78832-69552	Temperature	A	
78832-69562	Respiration	B	
78832-69552	Temperature	B	
78834-69552		A	
78834-69572	tcp CO_2/O_2	B	
78356-69540	CO_2/O_2	A	
78354-69510	SaO_2	D	Will be used in 78352A and 78354A. Remove software before sending to exchange[1]
78354-69520		A	

1 For 5181-1481 only

Board vs EPROM Chart (Revision A)

Bd. vs EPROM Blatt 1 hier einfügen

Figure 2a-1. Board vs EPROM Chart (Revision A)

2a-8   Schematic Diagrams

Bd. vs EPROM Blatt 2 hier einfügen

Bd. vs EPROM Blatt 3 hier einfügen

Board vs EPROM Chart (Revision C)

Neue Bd. vs EPROM Chart Blatt 1 hier einfügen

Figure 2a-2. Board vs EPROM Chart (Revision C)

Neue Bd. vs EPROM Chart Blatt 2 hier einfügen

List of Signal Abbreviations Used

ABBREVIATION	MEANING
ABBREVIATION	MEANING
ZAV	zero alarm volume
SENS	sensitivity
VERT GND	Vertical ground
HOR GND	Horizontal ground
SIGN GND	Signal ground
REF ADJ	Reference adjust
COMP	Comparator signal
MUX	Multiplexer signal
CH	Channel
POW F	Power fail
f-CHAR	Character frequency signal
DE	Display enable signal
DE*	Display enable signal delayed by two clock cycles
CAL	Calibration signal
AUX AL	Auxiliary alarm
SL D	Slot code designator
INOP	Inoperative signal
VIDEO NUM	Video numerics
SLOW SYNC	Slow synchronisation pulse
FAST SYNC	Fast synchronisation
PON RESET	Power-on reset
RDSM	Shared memory read signal
CSSM	Shared memory chip select signal
WR	Write signal
DIG GND	Digital ground
CS	Chip select
GND	Ground
RD	Read signal
INT	Interrupt
MREQ	Memory request signal
IORQ	Input/output request signal
RFSH	Refresh signal
M1	Machine cycle 1
CL	
CLK	Clock signal
CLCK	
BUSRQ	Bus request signal
CE	Chip enable
EW	End of wave signal
NUM	Numeric(s)
SM	Shared memory

. . . .

Bitte Schematics von Seite 2-7 (Mother Board) hier einfuegen

Figure 2a-3. Mother Board

. . . .

Bitte Schematics von Seite 2-9 (Extender Board) hier einfuegen

Figure 2a-4. Extender Board

Bitte Schematics von Seite 2-10 (Replacement Parts A1) hier einfügen

Bitte Schematics von Seite 2-11 (Mother Board) hier einfuegen

Figure 2a-5. Mother Board Schematic (A1)

Bitte Schematics von Seite 2-12 (Replacement Parts A2) hier einfuegen

Bitte Schematic von Seite 2-13 (Display uP Board Schematic) einfuegen

Figure 2a-6. Display uP Board Schematic (A2)

Bitte Schematic von Seite 2-14 (Replacement Parts A2) hier einfuegen

Bitte Schematic von Seite 2-15 (Display uP Board Schematic) hier einfuegen

Figure 2a-7. Display uP Board Schematic (A2 continued)

Bitte Schematic von Seite 2-16 (Replacement Parts A2) hier einfuegen

Bitte Schematic von Seite 2-17 (Display MP Board Schematic) hier einfuegen

Figure 2a-8. Display MP Board Schematic (A2 continued)

Bitte Schematic von Seite 2-18 (Replacement Parts A2) hier einfuegen

Bitte Schematic von Seite 2-19 (Display MP Board Schematic) hier einfuegen

Figure 2a-9. Display MP Board Schematic (A2 continued)

Bitte Schematic von Seite 2-8A (Replacement Parts A2) hier einfuegen

Bitte Schematic von Seite 2-8B (Display MB Board Schematic) hier einfuegen

Figure 2a-10. Display MP Board Schematic (A2 continued)

Bitte Schematic von Seite 2-8C (Replacement Part A2) hier einfuegen

Bitte Schematic von Seite 2-8D (Display MB Board Schematic) hier einfuegen

Figure 2a-11. Display MP Board Schematic (A2 continued)

Bitte Schematic von Seite 2-20 (Replacement Parts A3) hier einfuegen

Bitte Schematic von Seite 2-21 (Interpolation Board) hier einfuegen

Figure 2a-12. Interpolation Board Schematic (A3)

Bitte Schematic von Seite 2-22 (Replacements Parts A3) hier einfuegen

Bitte Schematic von Seite 2-23 (Interpolation Board) hier einfuegen

Figure 2a-13. Interpolation Board Schematic (A3 continued)

Bitte Schematic von Seite 2-24 (Replacement Parts A6) hier einfuegen

Bitte Schematics von Seite 2-25 (Power Supply Board A6/A7) hier einfuegen

Figure 2a-14. Power Supply Boards Schematic (A6/A7)

Bitte Schematic von Seite 2-26 (Replacment Parts A10) hier einfuegen

Bitte Schematic von Seite 2-27 (SpO__2__ Board Schematic A10) hier einfuegen

Figure 2a-15. SpO$_2$ Board Schematic (A10)

Bitte Schematic von Seite 2-28 (Replacment Parts A10) hier einfuegen

Bitte Schematic von Seite 2-29 (SpO2 Board Schematic A10) hier einfuegen

Figure 2a-16. SpO$_2$ Board Schematic (A10 continued)

Bitte Schematic von Seite 2-30 (Replacment Parts A10) hier einfuegen

Bitte Schematic von Seite 2-31 (SpO_2_ Board Schematic A10) hier einfuegen

Figure 2a-17. SpO$_2$ Board Schematic (A10 continued)

. . . .

Bitte Schematics von Seite 2-32A (Replacement Parts A12) hier einfuegen

Bitte Schematic von Seite 2-32B (Audio Board Schematic) hier einfuegen

Figure 2a-18. Audio Board Schematic (A12)

Bitte Schematics von Seite 2-32 (Replacement Parts A11/A12) hier einfuegen

Bitte Schematic von Seite 2-33 (Audio Board Schematic) hier einfuegen

Figure 2a-19. Audio Board Schematic (A12 continued)

Bitte Schematic von Seite 2-34 (Schematic A19) hier einfuegen

Bitte Schematic von Seite 2-35 (Battery and Lamp s.) hier einfuegen

Figure 2a-20. Battery and Lamp Boards Schematic (A18/A19)

Bitte Schematic von Seite 2-34A (Replacement Parts A20) hier einfuegen

Bitte Schematic von Seite 2-34B (SaO2 Board S.) hier einfuegen

Figure 2a-21. SpO$_2$ Board Schematic (A20)

Bitte Schematic von Seite 2-34C (Replacement Parts A20) hier einfuegen

Bitte Schematic von Seite 2-34D (SaO2 Board S.) hier einfuegen

Figure 2a-22. SpO$_2$ Board Schematic (A20 continued)

Bitte Schematic von Scitc 2-34E (Replacement Parts A20) hier einfuegen

Bitte Schematic von Seite 2-34F (SaO2 Board S.) hier einfuegen

Figure 2a-23. SaO$_2$ Board Schematic (A20 continued)

Bitte Schematic von Seite 2-34F (SaO2 Board S.) hier einfuegen

Figure 2a-23. SaO$_2$ **Board Schematic (A20 continued)**

Bitte Schematic von Seite 2-36 (Replacement Parts A22) hier einfuegen

Bitte Schematic von Seite 2-37 (ECG Board Analog Circuits S.) hier einfuegen

Figure 2a-24. ECG Board (Full-lead) Analog Circuits Schematic (A22/A42)
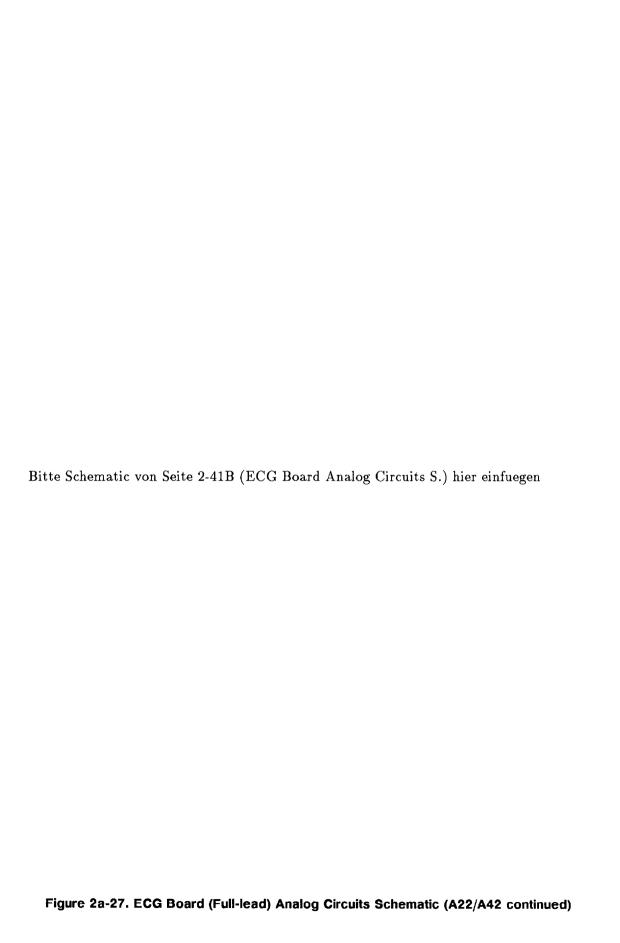
Bitte Schematic von Seite 2-38 (Replacement Part A22) hier einfuegen

Bitte Schematic von Seite 2-39 (ECG Board Analog Circuits S.) hier einfuegen

Figure 2a-25. ECG Board (Full-lead) Analog Circuits Schematic (A22/A42 continued)
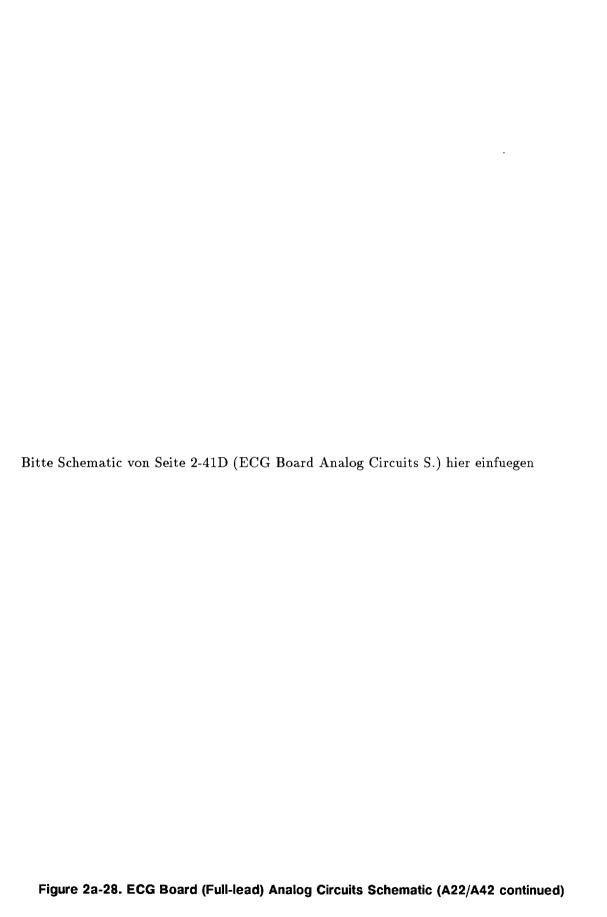
Bitte Schematic von Seite 2-40 (Replacement Part A22) hier einfuegen

Bitte Schematic von Seite 2-41 (ECG Board Analog Circuits S.) hier einfuegen

Figure 2a-26. ECG Board (Full-lead) Analog Circuits Schematic (A22/A42 continued)

Bitte Schematic von Seite 2-41A (Replacement Part A22) hier einfuegen

Bitte Schematic von Seite 2-41B (ECG Board Analog Circuits S.) hier einfuegen

Figure 2a-27. ECG Board (Full-lead) Analog Circuits Schematic (A22/A42 continued)
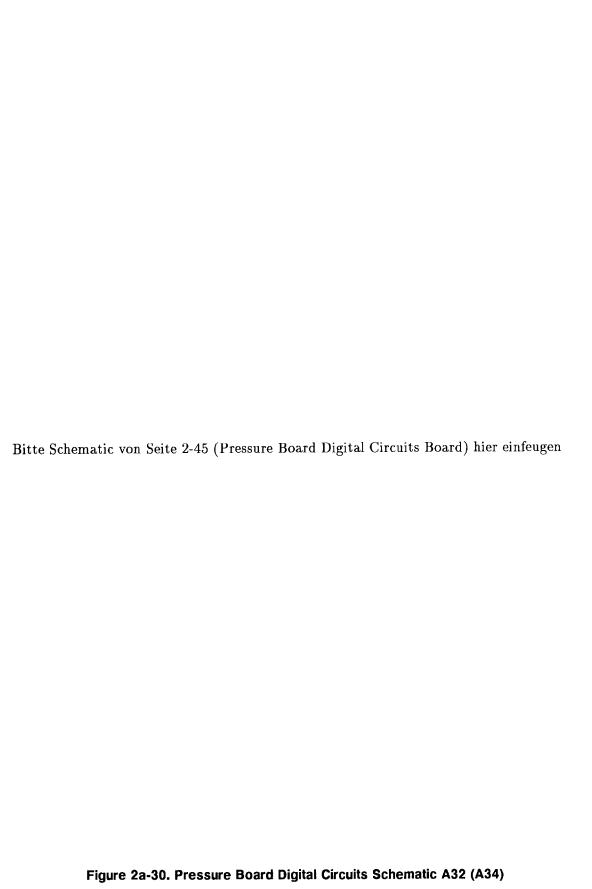
Bitte Schematic von Seite 2-41C (Replacement Part A22) hier einfuegen

Bitte Schematic von Seite 2-41D (ECG Board Analog Circuits S.) hier einfuegen

Figure 2a-28. ECG Board (Full-lead) Analog Circuits Schematic (A22/A42 continued)

Bitte Schematic von Seite 2-42 (Repl. Parts A32) hier einfuegen

Bitte Schematic von Seite 2-43 (Pressure Board and Input Conntection A31/A32) hier einfuegen

Figure 2a-29.
Pressure Board Analog Circuits and Input Connection Board Schematic A31/A32 (A33/A34)

Bitte Schematic von Seite 2-44 (Repl. Parts A34) hier einfuegen

Bitte Schematic von Seite 2-45 (Pressure Board Digital Circuits Board) hier einfeugen

Figure 2a-30. Pressure Board Digital Circuits Schematic A32 (A34)

Bitte Schematic von Seite 2-46 (Replacement Parts A35) hier einfuegen

Bitte Schematic von Seite 2-47 (NIBP Analog Circuits A35) hier einfuegen

Figure 2a-31. NIBP Board Analog Circuits Schematic (A35)

Bitte Schematic von Seite 2-48 (Replacement Parts A35) hier einfuegen

Bitte Schematic von Seite 2-49 (NIBP Analog Circuits A35) hier einfuegen

Figure 2a-32. NIBP Board Analog Circuits Schematic (A35 continued)

Bitte Schematic von Seite 2-49A (Replacement Parts A38) hier einfuegen

Bitte Schematic von Seite 2-49B (NIBP Board Digital Circuits Schematic A38) hier einfuegen

Figure 2a-33. NIBP Board Digital Circuits Schematic (A38)

Bitte Schematic von Seite 2-49C (Replacement Parts A38) hier einfuegen

Bitte Schematic von Seite 2-49D (NIBP Board Analog Circuits Schematic A38) hier einfuegen

Figure 2a-34. NIBP Board Analog Circuits Schematic (A38 continued)

Bitte Schematic von Seite 2-48A (Replacement Parts A-38) hier einfuegen

Bitte Schematic von Seite 2-48B hier (NIBP Board Schematic) einfuegen

Figure 2a-35. NIBP Board Schematic (A38 continued)

Bitte Schematic von Seite 2-48C (Replacement Parts A-38) hier einfuegen

Bitte Schematic von Seite 2-48D hier (NIBP Board Schematic) einfuegen

Figure 2a-36. NIBP Board Digital Circuit Schematic (A38 continued)

Bitte Schematics von Seite 2-50 (Replacement Parts A40) hier einfuegen

Bitte Schematic von Seite 2-51 hier (CO2 Board Motor... Schematic) einfuegen

Figure 2a-37. CO$_2$ Board Motor and Temp. Circuits Schematic (A40)

Bitte Schematic von Seite 2-52 (Replacement Parts A-40) hier einfuegen

Bitte Schematic von Seite 2-53 hier (CO2 Board Preamplifier.... Schematic) einfuegen

Figure 2a-38. CO$_2$ Board Preamplifier and Digital Circuits Schematic (A40 continued)

Bitte Schematic von Seite 2-54 (Replacement Parts A-41) hier einfuegen

Bitte Schematic von Seite 2-55 hier (O2 Board Schematic) einfuegen

Figure 2a-39. O$_2$ Board Schematic (A41)

Bitte Schematic von Seite 2-56 (Replacement Parts A-52) hier einfuegen

Bitte Schematic von Seite 2-57 hier (Temp/Pleth...Board Schematic) einfuegen

Figure 2a-40. Temp/Pleth/Aux Bd Analog Circuits and Input Conn.Bd Schematic (A51/A52)

Bitte Schematic von Seite 2-58 (Replacement Parts A-52) hier einfuegen

Bitte Schematic von Seite 2-59 hier (Temp/Pleth...Board Schematic) einfuegen

Figure 2a-41. Temp/Pleth/Aux Bd Digital Circuits Schematic (A52)

Bitte Schematics von Seite 2-60 (Replacement Parts A52) hier einfuegen

Bitte Schematic von Seite 2-61 hier (Temp/Pleth...Board Schematic) einfuegen

Figure 2a-42. Temp/Pleth/Aux Bd Analog Circuits and Input Conn. Bd Schematic (A51/A52)

Bitte Schematics von Seite 2-62 (Replacement Parts A52) hier einfuegen

Bitte Schematic von Seite 2-63 (Temp/Pleth/Aux Board ..S.) hier einfuegen

Figure 2a-43. Temp/Pleth/Aux Board Digital Circuits Schematic (A52 continued)

Bitte Schematic von Seite 2-64 (Replacement Parts A52) hier einfuegen

Bitte Schematic von Seite 2-65 (Temperature Board Analog ..S.) hier einfuegen

Figure 2a-44.
Temperature Board Analog Circuits and Input Connection Schematic (A52 continued)

Bitte Schematic von Seite 2-66 (Replacement Parts A54) hier einfuegen

Bitte Schematic von Seite 2-67 (Temperature Board..S. A53/A54) hier einfuegen

Figure 2a-45.
Temperature Board Analog Circuits and Input Connection Board Schematic (A53/A54)

Bitte Schematic von Seite 2-68 (Replacement Parts A54) hier einfuegen

Bitte Schematic von Seite 2-69 (Temperature Board..S. A54) hier einfuegen

Figure 2a-46. Temperature Board Digital Circuits Schematic (A54 continued)

Bitte Schematic von Seite 2-70 (Replacement Parts A54) hier einfuegen

Bitte Schematic von Seite 2-71 (Temperature Board..S. A54) hier einfuegen

Figure 2a-47.
Temperature Board Analog Circuits and Input Connection Schematic (A53/A54 continued)

Bitte Schematic von Seite 2-72 (Replacement Parts A54) hier einfuegen

Bitte Schematic von Seite 2-73 (Temperature Board..S. A54) hier einfuegen

Figure 2a-48. Temperature Board Digital Circuits Schematic (A54 continued)

Bitte Schematic von Seite 2-74 (Replacement Parts A62) hier einfuegen

Bitte Schematic von Seite 2-75 (Respiration Board....S. A61/A62) hier einfuegen

Figure 2a-49.
Respiration Board Analog Circuits and Input Connection Board Schematic (A61/A62)

Bitte Schematic von Seite 2-76 (Replacement Parts A62) hier einfuegen

Bitte Schematic von Seite 2-77 (Respiration Board....S. A62) hier einfuegen

Figure 2a-50. Respiration Board Digital Circuits Schematic (A62 continued)

Bitte Schematic von Seite 2-78 (Replacement Parts A72) hier einfuegen

Bitte Schematic von Seite 2-79 (tcpCO2/O2 Board...S. A72) hier einfuegen

Figure 2a-51. tcpCO$_2$/O$_2$ Board Analog Circuits Schematic (A72)

Bitte Schematic von Seite 2-80 (Replacement Parts A72) hier einfuegen

Bitte Schematic von Seite 2-81 (tcpCO2/O2 Board...S. A72) hier einfuegen

Figure 2a-52. tcpCO$_2$/O$_2$ Board Analog Circuits Schematic (A72 continued)

Bitte Schematic von Seite 2-82 (Replacement Parts A73) hier einfuegen

Bitte Schematic von Seite 2-83 (Barometer Board Schematic A73) hier einfuegen

Figure 2a-53. Barometer Board Schematic (A73)

Bitte Schematic von Seite 2-84 (Replacement Parts A90) hier einfuegen

Bitte Schematic von Seite 2-85 (System Board Schematic A90) hier einfuegen

Figure 2a-54. System Board Schematic (A90)

Bitte Schematic von Seite 2-86 (Replacement Parts A92) hier einfuegen

Bitte Schematic von Seite 2-87 (780 System Board Analog.... A92) hier einfuegen

Figure 2a-55. 780 System Board Analog Circuits Schematic (A92)

Bitte Schematic von Seite 2-88 (Replacement Parts A92) hier einfuegen

Bitte Schematic von Seite 2-89 (780 System Board Digital.... A92) hier einfuegen

Figure 2a-56. 780 System Board Digital Circuits Schematic (A92 continued)

Bitte Schematic von Seite 2-90 (Replacement Parts A95) hier einfuegen

Bitte Schematic von Seite 2-91 (SDN Board A95) hier einfuegen

Figure 2a-57. SDN Board (A95)

Bitte Schematic von Seite 2-88A (Replacement Parts A95) hier einfuegen

Bitte Schematic von Seite 2-88B (SDN Board A95) hier einfuegen

Figure 2a-58. SDN Board (A95 continued)

Bitte Schematic von Seite 2-92 (Replacement Parts A98) hier einfuegen

Bitte Schematic von Seite 2-93 (RS232 Board Schematic A98) hier einfuegen

Figure 2a-59. RS232 Board Schematic (A98)

Bitte Schematic von Seite 2-94 (Front View Keyboard) hier einfügen

Figure 2a-60. Front View Keyboard

2b

Connection Boards

Introduction

The circuits which connect the front panel input connectors to the parameter boards are on *input connection boards.* There are several of these boards which combine the circuits for ECG, pressure, respiration etc. to meet the requirements of the various parameter options.

Bitte Diagram von Seite 2-95 hier einfuegen

Bitte Diagram von Seite 2-96 hier einfuegen

Bitte Diagram von Seite 2-97 hier einfuegen

Bitte Diagram von Seite 2-98 hier einfuegen

Bitte Diagram von Seite 2-99 hier einfuegen

Bitte Diagram von Seite 2-100 hier einfuegen

Bitte Diagram von Seite 2-101 hier einfuegen

Bitte Diagram von Seite 2-102 hier einfuegen

Bitte Diagram von Seite 2-103 hier einfuegen

Bitte Diagram von Seite 2-104 hier einfuegen

3

Replaceable Parts List

Introduction

This section contains information for locating, identifying and ordering replacement parts for the 783XX Series and 788XX Series of monitors.

Note	Part numbers for fixed components loaded on boards (e.g. mother board, interpolation, uP display and parameter boards etc.) are shown within the Schematics Section opposite the respective board.

The parts lists in the following pages are classified under:

■ General Options for all Types of Monitors

and in instrument numerical order under:

■ Basic Unit Parts

■ Front Panel Parts

■ Option Parts

■ Socketed Parts

The following paragraph describes how to find a part number.

How to Find a Part

a)	Is it a mechanical part e.g. screw or side panel?	Look at overall assembly picture or relevant parts list
b)	Is it a complete board?	Part number is printed on board
c)	Is it a plug-in part e.g. EPROMs/RAMs?	Refer to the relevant socketed parts list under the appropriate option (#).
d)	Is it a fixed board part e.g. resistor, capacitor?	Locate part on component locator diagram (Schematics Section) and identify part number from adjacent parts list.

Note	Transcutaneous CO2/O2 Input Connectors *(used with 78834-66572 boards)*

The input connector board assemblies are not repairable and must be ordered as a complete assembly. This is because of the minute currents (tens of nAmps) produced in the transducer and self repair may produce stray currents and leakage paths. This may lead to signal drift and incorrect measurements.

A separate tcpO2 input wire exists in order to prevent leakage with this sensitive input.

ORDERING INFORMATION

Note	Occasionally, electronic items in the replacement parts list will be found to carry standard commercial identification numbers but which also are indicated as being manufactured by HP. These components have been selected to meet specific operational criteria. The use of these components purchased through normal commerical channels may result in degradation of the operation, performance or reliability of the unit.

1. To order a replacement part, address your order or inquiry to the local Hewlett-Packard Sales/Service Office (see list of addresses at the rear of the manual) and supply the HP part number of the item from the listing.

   DIRECT MAIL ORDER FOR U.S.A. ONLY SEE "Direct Mail Order Program" in Appendix A

2. To order a part not listed in a table, provide the following information:

   a. Model number of the instrument

   b. Complete serial number of the instrument.

   c. Description of the part number including function and location.

3. To order a part from a manufacturer other than Hewlett-Packard Company, include the complete part description.

4. A list of abbreviations used in the parts lists is contained in Table 3-1

Table 3-1. List of Abbreviations

#	number
"	inches
'	feet
A	assembly, Amperes
A/F	across flats (nut)
A/R	as required
ADJ	adjust, adjustable
Al	aluminium
AIF	annotating interface
ASCII	American Standard Code for Information
AT	Amperes - time delay
BARR	barrier
BILATL	bilateral
BCD	binary coded decimal
BFR	
BLK	block, black
BRS	brass
BSC	basic
C	cermet, capacitor, capacitance
CALC	calculation, calculator
CBL	cable
CC	carbon composition, cubic centimeters
CEE	European Electrical Congress
CER	ceramic
CH	channel
CHAM	chamfer, chamfered
CHAN	channel
CLR	clear, clearance
CM	centimeters
COMPRSN	compression (spring)
CONT	contact, container
CRT	cathode-ray tube
Cu	copper
CVR	cover
CYL	cylinder
DARL	Darlington (circuit)
DBL	double
DEC	decimal
DESMOP	desmopan
DIP	dual-in-line flat pack (for integrated circuit)
DIV	divider
DSP	display
DO	package tpe, diode
ELCTRN	electron
ELEC	electrolytic
ELEK	electronic
EXT	external, extension (spring)
EXTR	external

Table 3-1. List of Abbreviations (continued)

F	female, fixed
FC	fixed, carbon
FEM	female
FET	field effect transistor
FF	flip-flop (BSMV)
FIL	filament, filister (screw head type)
FL	flat, flash, fluid, full
FLG	flanged
FLM	film
FT	foot, feet; gain X bandwidth product
FXD	fixed
GE	germanium
GEN	general
HEX	hexagonal, hexadecimal
HD	head, heavy-duty
HLCL	helical
HS	high speed, heat sealed, heat shrink
HYB	hybrid
IC	integrated circuit
ID	inside diameter
IEC	International Electrotechnical Commission
IN	inch(es)
INCL	including
INDL	industrial
uP	microprocessor
INTL	internal
INP	input
INV	inverter, inverting
JEDEC	Joint Electron Device Engineering Councils
JU	jumper
LG	long
LK	lock
LKG	locking
LKWR	lockwasher (LKWASH)
L/S	liters per second
LS, LSI	large scale integration
LV	low voltage
LVR	lever
MACH	machine
MF	microfarad
MINTR	miniature (MIN., MINAT.)
MLD	mold, molded
MO	metal oxide
MOS	metal oxide substrate
MONOSTBL	monostable
MSMV	monostable multivibrator
MT	mount, mounting
MTG	mounting
MTLC	metallic
MUXR	multiplexer
MYL	Mylar

Table 3-1. List of Abbreviations (continued)

NO	number
NPT	National Pipe Thread
NYL	Nylon (polymide)
OBD	order by description
OD	outside diameter
OP AMP	operational amplifier
OPT	option (OPN)
PARA	parameter
P	pitch (gear teeth)
PCB	printed circuit board
PD	power dissipation
PF	power factor, picofarad, peakflow
PHL	Phillips (cross slot screw head type)
PLSTC	plastic
PNEUM	pneumotach
POLYVC	polyvinylchloride
POLYE	polyester
PROTECT	protection
PRP	purpose
PS	Power Supply
PST	Post
PT	pint, part, point, pulse time
PVC	vinyl (polyvinyl chloride)
PW	power wound (resistor)
PWR	power
RAM	random access memory
REC	recess, recessed
RECT	rectifier
RGLTR	regulator
RLR	roller
RND	round
ROM	read only memory
RSTRD	Restored
RFI	Radiated Frequency Interference
SCR	srew, silicon controlled rectifier (thyristor)
SEL	selector, selected
SENS	sensitive
SGL	single
SHLDR	shoulder
Si	silicon
SKT	socket
SL	slide
SLDR	solder
SOL	solenoid
SPCL	special
SS	single shot (MSMV)
SST	stainless steel
STA	station
STD	standard

Table 3-1. List of Abbreviations (continued)

STL	steel
SUBMIN	subminiature
T-2	lamp bulb envelope shape (T), size in eighths of an inch
Ta	Tantalum (TANT)
TC	temperature coefficient, time constant
TERM	terminal
TGL	toggle
THD	thread
THK	thick
TO	transistor package type (T-O)
TPL	triple
TRAFO	transformator
TRIG	trigger
TRMR	trimmer (TRIM.)
TRSN	torsion
TTL	transistor transistor logic
UART	universal asynchronous receiver/transmitter
uF	microfarad
UNC	Unified National Coarse (machines screw thread)
UNF	Unified National Fine (machine screw thread)
UNHDND	unhardened (of metal)
us	microsecond
VAR	variable
VOL	volume
W	white
WD	wide
W/	with
W/O	without
W/MET	with metalization
WVDC	working volts dc
X	by (dimensional)
XSTR	transistor
Z-FOLD	Z-fold
ZNR	Zener (breakdown diode)

General Options for all types of Monitors

Country Options

Component Part	Description
#Y65	USA
#Y70	UK
#Y71	FRANCE/BELGIUM
#Y72	GERMANY/AUSTRIA
#Y73	NETHERL./BELGIUM
#Y75	ITALY

Language Options

Component Part	Description
#L01	FRENCH LANGUAGE
#L02	GERMAN LANGUAGE
#L03	DUTCH LANGUAGE
#L04	SPANISH LANGUAGE
#L05	ITALIAN LANGUAGE
#278/#L08	SWEDISH LANGUAGE
#201	ENGL.-LANGUAGE
#277	DANISH-LANGUAGE
#279	NORWEG-LANGUAGE
#280	FINNISH-LANGUAGE
#577	JAPAN.-LANGUAGE

Documentation

Component Part	Description
#910	SERVICE MANUAL

Standard Options

Component Part	Description
#N01	CSA-STANDARD
#N02	VDE/IEC-STANDARD
#N04	UL-STANDARD
#N12	GERM.TEMP STD
#N13	PTB-NIBP CAP.
#N15	US CORRECT

Power Line Options

Component Part	Description
#Z01	50HZ VERSION
#Z02	100V VERSION
#Z03	115V VERSION
#Z05	230V VERSION
#Z07	60HZ VERSION

Right angle power cords are ordered under the following part number:

Power Cord

Component Part	Description
78599A1 Opt. Z92	USA 76cm (30in)
78599A1 Opt. Z93	USA 2.44m (8ft)
78599A1 Opt. Z96	India/South Africa
78599A1 Opt. 982	Danish
78599A1 Opt. 990	United Kingdom
78599A1 Opt 991	Australia/New Zealand
78599A1 Opt 992	European (Except UK and Switzer.)
78599A1 Opt 996	Switzerland

Instrument Model Number: 78352A
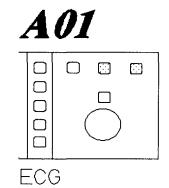
Model Description: Surgical Monitor

Basic Unit Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	1
0515-1323	SCR-MACH M3X30	2
5041-4202	KNOB-DESMOP/GRAY	7
5041-4237	COVER-PLSTC,AUX.	1
5061-5689	COMMON UNIT 3/4	1
78352-20200	INSTR.CRD LH/ENG	1
78352-20220	INSTR.CRD CNT/E.	1
78352-20241	INSTR.CRD RH/FR	0
78352-20242	INSTR.CRD RH/GER	0
78352-20243	INST CRD RH/DUT	0
78352-20246	ISTR.CRD RH/SWED	0
78352-20247	INST.CRD RH/FINN	0
78352-20250	INSTR.CRD RH/JAP	0
78352-66503	BD AY-INTERPOLAT	1
78352-90001	OPER GUIDE ENGL.	1
78352A #A01	ECG	0
78352A #A11	ECG/NIBP	0
78352A #A13	ECG/NIBP/2TEMP	0
78352A #A15	SPO2/NIBP	0
78352A #A16	ECG/SPO2/NIBP	0
78352A #E20	KPA	0
78352A #J10	LIMITED 780-IF	0
78352A #J11	ANNOT INTERFACE	0
78352A #J12	SDN INTERFACE	0
78352A #J13	RS232 IF	0
78352A #J20	ARRHYT.BANDWIDTH	0
78353-01212	BRACKET-CVR 780 AIF	1
78353-04105	COVER-AUDIO	1
78353-04107	CVR-PROTECT. 780 AIF	1
78353-04305	LABEL-AUDIO/AUX	1
78354-66602	BD AY-DISPLAY/uP	1
78354-90011	INSTALL.BOOK	1
9223-0514	TAPE-INDL 80MM	1.5

Socketed Parts

Component Part	Description	Qty
5181-4723	352A DSP U26/40K	1
5181-4724	DSP U50 40K/ENGL	0
5181-4745	EPR CHAR GEN STD	0

Parameter Option: #A01 (ECG)

A01

ECG

Front Panel Parts
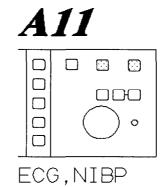
Component Part	Description	Qty
5040-1194	HSG-CONN.W.MET.	1
78352-40201	PANEL FRONT PLAS	1
78354-66521	BD CONN F.L.ECG	1

Socketed Parts

Component Part	Description	Qty
5180-5582	EPR ECG ADLT	1
5180-6805	PACE PULS DET.	1

Parameter Option: #A11 (ECG,NIBP)

A11

ECG,NIBP

Front Panel Parts

Component Part	Description	Qty
5040-1194	HSG-CONN.W.MET.	1
78352-40212	PANEL FRNT PLAST	1
78354-60005	CONNECTOR-AIR	1
78354-66521	BD CONN F.L.ECG	1

Option Parts

Component Part	Description	Qty
0363-0170	GASKETING RFI	0.1
0460-1455	TAPE-INDL .5IN-W	0.05
0515-0886	SCR-MACH.M3X6MM	2
0515-0898	SCR-MACH M4X0.7	2
0515-1232	SCR M3.5X8 PH	2
0535-0023	NUT-HEX M4X0,7	4
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	4
3050-0893	WASH FL M4	2
40401C	ADULT CUFF	1
5041-4202	KNOB-DESMOP/GRAY	2
5041-4218	COVER-BD.NIBP	1
5061-5661	TUBING CUFF ASSY	1
78352-00601	SHIELD TRAFO	1
78352-02302	HOLDER-PUMP	1

Option Parts (continued)
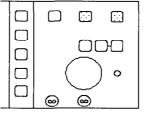
Component Part	Description	Qty
78352-20240	INSTR.CRD RH/ENG	0
78352-20241	INSTR.CRD RH/FR	0
78352-20242	INSTR.CRD RH/GER	0
78352-20243	INSTR CRD RH/DUT	0
78352-20244	INSTR.CARD RH/SPA	0
78352-20245	INSTR.CRD RH/ITL	0
78352-20246	ISTR.CRD RH/SWED	0
78352-20247	INST.CRD RH/FINN	0
78352-20250	INSTR.CRD RH/JAP	0
78352-44303	LABEL WARNING	1
78352-60002	PUMP DC	1
78352-60004	TUBING AY INTERN	1
78352-61602	CBL AY PUMP CONT	1
78352-66535	BD AY NIBP PARA	1
78352-66537	BD AY-PUMP CONTR	1
78352-66539	BD AY PUMP FILTER	1

Socketed Parts

Component Part	Description	Qty
5180-5582	EPR ECG ADLT	1
5180-5596	EPROM NIBP	1
5180-6805	PACE PULS DET.	1

Parameter Option: #A13 (ECG, NIBP, 2TEMP)

A13

ECG,NIBP,2TEMP

Front Panel Parts

Component Part	Description	Qty
5040-1179	SPACER	1
5041-4238	HSG CONN DUA MET	1
78352-40214	PANEL FRNT PLAST	1
78352-66550	BD-CONN.ECG/2XT	1
78354-60005	CONNECTOR-AIR	1

Option Parts

Component Part	Description	Qty
0363-0170	GASKETING RFI	0.1
0460-1455	TAPE-INDL .5IN-W	0.05
0515-0886	SCR-MACH.M3X6MM	3
0515-0898	SCR-MACH M4X0.7	2
0515-1232	SCR M3.5X8 PH	1
0535-0023	NUT-HEX M4X0,7	4
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	4
3050-0893	WASH FL M4	2
40401C	ADULT CUFF	1
5040-1167	COVER-BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	3
5041-4216	ADAPTER-TEMP.CON	1
5041-4218	COVER-BD.NIBP	1
5061-5661	TUBING CUFF ASSY	1

Option Parts (continued)
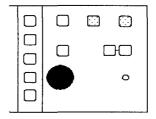
Component Part	Description	Qty
78352-00601	SHIELD TRAFO	1
78352-02302	HOLDER-PUMP	1
78352-20240	INSTR.CRD RH/ENG	0
78352-20241	INSTR.CRD RH/FR	0
78352-20242	INSTR.CRD RH/GER	0
78352-20243	INST CRD RH/DUT	0
78352-20244	ISTR.CARD RH/SPA	0
78352-20245	INSTR.CRD RH/ITL	0
78352-20246	ISTR.CRD RH/SWED	0
78352-20247	INST.CRD RH/FINN	0
78352-20250	INSTR.CRD RH/JAP	0
78352-44303	LABEL WARNING	1
78352-60002	PUMP DC	1
78352-60004	TUBING AY INTERN	1
78352-61602	CBL AY PUMP CONT	1
78352-66535	BD AY NIBP PARA	1
78352-66537	BD AY-PUMP CONTR	1
78352-66539	BD AY PUMP FILTER	1
78353-01207	BRACKET-TEMP CON	1
78353-61606	CABLE AY-TEMP.II	2
78354-66554	BD-DUAL,TEMP.PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5544	EPR-64K/TEMP	1
5180-5582	EPR ECG ADLT	1
5180-5596	EPROM NIBP	1
5180-6805	PACE PULS DET.	1

Parameter Option: #A15 (SPO2,NIBP)

A15

SpO2,NIBP

Front Panel Parts

Component Part	Description	Qty
78352-40216	PNL FRNT PLASTIC	1
78354-60005	CONNECTOR-AIR	1
78354-66511	BD AY CONN SP02	1
5040-1199	HOUSING. CONN.	1
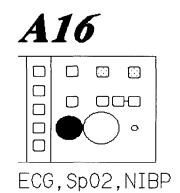
Option Parts

Component Part	Description	Qty
0363-0170	GASKETING RFI	0.1
0460-1455	TAPE-INDL .5IN-W	0.05
0515-0886	SCR-MACH.M3X6MM	2
0515-0898	SCR-MACH M4X0.7	2
0515-1232	SCR M3.5X8 PH	1
0535-0023	NUT-HEX M4X0,7	4
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	4
2950-0001	NUT-HEX 318-32TH	-1
3050-0391	WASH BRS .385 ID	-1
3050-0893	WASH FL M4	2
40401C	ADULT CUFF	1
5040-1161	COVER BD SPO2	1
5040-1187	COVER-ECG-PREAMP	-1
5041-4202	KNOB-DESMOP/GRAY	2
5041-4218	COVER-BD.NIBP	1
5061-5661	TUBING CUFF ASSY	1

Option Parts (continued)

Component Part	Description	Qty
78352-00601	SHIELD TRAFO	1
78352-02302	HOLDER-PUMP	1
78352-20240	INSTR.CRD RH/ENG	0
78352-20241	INSTR.CRD RH/FR	0
78352-20242	INSTR.CRD RH/GER	0
78352-20243	INSTR CRD RH/DUT	0
78352-20244	INSTR.CARD RH/SPA	0
78352-20245	INSTR.CRD RH/ITL	0
78352-20246	INSTR.CRD RH/SWED	0
78352-20247	INSTR.CRD RH/FINN	0
78352-20250	INSTR.CRD RH/JAP	0
78352-44303	LABEL WARNING	1
78352-60002	PUMP DC	1
78352-60004	TUBING AY INTERN	1
78352-61602	CBL AY PUMP CONT	1
78352-66535	BD AY NIBP PARA	1
78352-66537	BD AY-PUMP CONTR	1
78352-66539	BD AY PUMP FILTER	1
78354-66510	BD AY PARAM.SP02	1
78354-66522	BD-F.L.ECG/50HZ	-1
78356-25701	COVER-NUT/12MM	1

Socketed Parts

Component Part	Description	Qty
5180-5596	EPROM NIBP	1
5181-1403	EPROM SPO2	1

Parameter Option: #A16 (ECG, SPO2, NIBP)

A16

ECG,SpO2,NIBP

Front Panel Parts

Component Part	Description	Qty
5040-1194	HSG-CONN.W.MET.	1
5040-1199	HOUSING-CONN.	1
78352-40215	PNL FRNT PLASTIC	1
78354-60005	CONNECTOR-AIR	1
78354-66511	BD AY CONN SPO2	1
78354-66521	BD CONN F.L.ECG	1

Option Parts

Component Part	Description	Qty
0363-0170	GASKETING RFI	0.1
0460-1455	TAPE-INDL .5IN-W	0.05
0515-0886	SCR-MACH.M3X6MM	2
0515-0898	SCR-MACH M4X0.7	2
0515-1232	SCR M3.5X8 PH	1
0515-1323	SCR-MACH M3X30	2
0535-0023	NUT-HEX M4X0,7	4
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	4
3050-0893	WASH FL M4	2
40401C	ADULT CUFF	1
5040-1161	COVER BD SPO2	1
5041-4202	KNOB-DESMOP/GRAY	3
5041-4218	COVER-BD.NIBP	1

Option Parts (continued)

Component Part	Description	Qty
5061-5661	TUBING CUFF ASSY	1
78352-00601	SHIELD TRAFO	1
78352-02302	HOLDER-PUMP	1
78352-20240	INSTR.CRD RH/ENG	0
78352-20241	INSTR.CRD RH/FR	0
78352-20242	INSTR.CRD RH/GER	0
78352-20243	INSTR CRD RH/DUT	0
78352-20244	INSTR.CARD RH/SPA	0
78352-20245	INSTR.CRD RH/ITL	0
78352-20246	INSTR.CRD RH/SWED	0
78352-20247	INSTR.CRD RH/FINN	0
78352-20250	INSTR.CRD RH/JAP	0
78352-44303	LABEL WARNING	1
78352-60002	PUMP DC	1
78352-60004	TUBING AY INTERN	1
78352-61602	CBL AY PUMP CONT	1
78352-66535	BD AY NIBP PARA	1
78352-66537	BD AY-PUMP CONTR	1
78352-66539	BD AY PUMP FILTER	1
78354-66510	BD AY PARAM.SP02	1

Socketed Parts

Component Part	Description	Qty
5180-5582	EPR ECG ADLT	1
5180-5596	EPROM NIBP	1
5180-6805	PACE PULS DET.	1
5181-1403	EPROM SP02	1

Interface Option: #J10 (Limited 780 Interface)

Option Parts

Component Part	Description	Qty
78353-66590	BD.AY-LTD.INTERF	1

Socketed Parts

Component Part	Description	Qty
5180-2861	EPR LIM780 SURGI	1

Interface Option: #J11 (Annot. Interface)

Option Parts

Component Part	Description	Qty
78353-66592	BD AY-780 AIF	1

Socketed Parts

Component Part	Description	Qty
5180-2898	EPR -780 8K	1
5180-2899	EPR -780 16K	1

Interface Option: #J12 (SDN Interface)

Option Parts

Component Part	Description	Qty
78353-01212	BRACKET-CVR 780	-1
78353-04107	CVR-PROTECT.780	-1
78353-66594	BD CONN SDN	1
78353-66595	BD AY-SDN INTERF	1

Socketed Parts

Component Part	Description	Qty
5181-1450	EPR SDN	1
5181-1452	EPR SDN MES	1

Interface Option: #J13 (RS232 Interface)

Option Parts

Component Part	Description	Qty
0400-0601	GROMMET-CHANNEL	0.1
0515-1060	SCR-MACH M3X25	1
0515-1091	SCR M3,5X10 PAN	1
0515-1232	SCR M3.5X8 PH	-1
5061-5662	BD AY-EXT.40-PIN	0
78353-01217	BRACKET-HOLDER	1
78353-04105	COVER-AUDIO	-1
78353-04106	COVER-AUDIO/RS	1
78353-04305	LABEL-AUDIO/AUX	-1
78353-04307	LBL-AUDIO/RS+AUX	1
78354-66598	BD AY-RS232 IF	1
78354-66599	BD AY-CONN/RS232	1

Socketed Parts

Component Part	Description	Qty
5180-7485	EPR RS232	1

Instrument Model Number: 78352C

Model Description: Surgical Monitor

Basic Units Parts
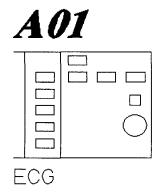
Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	2
0515-1323	SCR-MACH M3X30	2
5041-4209	PNL FRONT FILTER	1
5041-4237	COVER-PLSTC,AUX.	1
5061-8329	COMMON UNIT 3/4	1
5090-2812	WARNING SHEET	0
78351-69506-D	DEFECTIVE BOARD	1
78352-66503	BD AY-INTERPOLAT	1
78352-66519	BD AY LED DRIVER	1
78353-01212	BRACKET-CVR 780	1
78353-04107	CVR-PROTECT.780	1
78354-9011A	INSTALLATION GUIDE	1
78834-66510	BD AY LED ALARM	1

Socketed Parts

Component Part	Description	Qty
5181-1421	EPR SW ENG 78352C	0
5181-1431[1]	EPR 1 STD 78352C	1
		or
5181-4751	EPR ECG+ST ENGL.	1
5181-1464[2]	EPR-ECG ADLT	1
		or
5181-4750	EPR ECG / ST	1
5181-4745	EPR CHAR GEN STD	0
5180-6805	PACE PULS DET.	1

1 If #E15 ordered, replace 5181-1431 with 5181-4750.

2 If #E15 ordered, replace 5181-1464 with 5181-4750.
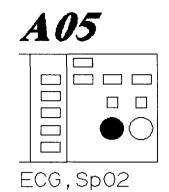
Parameter Option: #A01 (ECG)

A01

ECG

Front Panel Parts

Component Part	Description	Qty
78354-61901 (T)	TEXT FRONT PANEL	1
		or
78354-61931 (S)	SYMBOL FRONT PANEL	1
5040-1194	HSG-CONN.W.MET.	1
78354-66621	BD AY CONN ECG	1

Option Parts

Component Part	Description	Qty
5021-3646	SPACER	1

Parameter Option: #A05 (ECG SPO2)

A05

ECG, SpO2

Front Panel Parts

Component Part	Description	Qty
78352-61904 (T)	TEXT FRONT PANEL	1
		or
78352-61934 (S)	SYMBOL FRONT PANEL	1
78354-66511	BD AY CONN SPO2	1
78354-66621	BD AY CONN ECG	1
5040-1194	HSG-CONN.W.MET.	1
5040-1199	HOUSING-CONN.	1

Option Parts
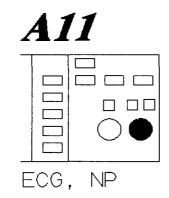
Component Part	Description	Qty
0460-1455	TAPE-INDL .5IN-W	0.05
0515-1323	SCR-MACH M3X30	2
5021-3646	SPACER	1
5041-4300	LBL INFO/SPO2	1
78354-61606	CABLE AY-SPO2	1
78354-66520	BD AY-SPO2 PARAM.	1

Socketed Parts

Component Part	Description	Qty
5181-1482	EPROM-SPO2	1

Parameter Option: #A11 (ECG/NIBP)

A11

ECG, NP

Front Panel Parts
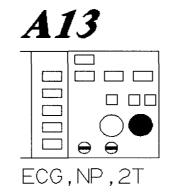
Component Part	Description	Qty
78352-61901 (T)	TEXT FRONT PANEL	1
		or
78352-61931 (S)	SYMBOL FRONT PANEL	1
78352-61603	CBL AY NP STAT	1
78354-60007	CONN.PNEUMATIC	1
78354-66621	BD AY CONN ECG	1
5040-1194	HSG-CONN.W.MET.	1

Option Parts

Component Part	Description	Qty
0460-1455	TAPE-INDL .5IN-W	0
0515-0885	SCR-MACH M4X8	2
0515-0886	SCR-MACH.M3X6MM	2
0515-1232	SCR M3.5X8 PH	1
0535-0023	NUT-HEX M4X0,7	4
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	6
40401C	ADULT CUFF	1
5041-4218	COVER-BD.NIBP	1
78352-00601	SHIELD TRAFO	1
78352-60010	PUMP ASSY	1
78352-61601	CBL AY PUMP PWR	1
78352-66538	BD AY NIBP PARAMETER	1

Socketed Parts

Component Part	Description	Qty
5181-1499	EPR-NBP JAPAN	1

Parameter Option: #A13 (ECG/NIBP/2TEMP)

A13

ECG , NP , 2T

Front Panel Parts

Component Part	Description	Qty
78352-61902 (T)	TEXT FRONT PANEL	1
		or
78352-61932 (S)	SYMBOL FRONT PANEL	1
5041-4238	HSG CONN DUA MET	1
78352-61603	CBL AY NP STAT	1
78352-66554	BD AY ECG 2T	1
78353-61606	CABLE AY-TEMP.II	2
78354-60007	CONN.PNEUMATIC	1
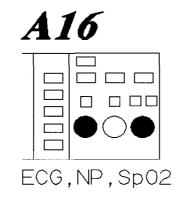
Option Parts

Component Part	Description	Qty
0460-1455	TAPE-INDL .5IN-W	0
0515-0885	SCR-MACH M4X8	2
0515-0886	SCR-MACH.M3X6MM	3
0515-1232	SCR M3.5X8 PH	1
0535-0023	NUT-HEX M4X0,7	4
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	6
40401C	ADULT CUFF	1
5040-1167	COVER-BD./METAL.	1
5040-1179	SPACER	1
5041-4216	ADAPTER-TEMP.CON	1
5041-4218	COVER-BD.NIBP	1

Option Parts (continued)

Component Part	Description	Qty
78352-00601	SHIELD TRAFO	1
78352-60010	PUMP ASSY	1
78352-61601	CBL AY PUMP PWR	1
78352-61603	CBL AY NP STAT	1
78352-66538	BD AY NIBP PARAMETER	1
78353-01207	BRACKET-TEMP CON	1
78354-66554	BD-DUAL,TEMP.PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5544	EPR-64K/TEMP	1
5181-1499	EPR-NBP JAPAN	1

Parameter Option: #A16 (ECG/SPO2/NIBP)

A16

ECG, NP, SpO2

Front Panel Parts

Component Part	Description	Qty
78352-61903 (T)	TEXT FRONT PANEL	1
		or
78352-61933 (S)	SYMBOL FRONT PANEL	1
5040-1194	HSG-CONN.W.MET.	1
5040-1199	HOUSING-CONN.	1
78352-61603	CBL AY NP STAT	1
78354-60007	CONN.PNEUMATIC	1
78354-66511	BD AY CONN SPO2	1
78354-66621	BD AY CONN ECG	1

Option Parts

Component Part	Description	Qty
0460-1455	TAPE-INDL .5IN-W	0
0515-0885	SCR-MACH M4X8	2
0515-0886	SCR-MACH.M3X6MM	2
0515-1232	SCR M3.5X8 PH	1
0515-1323	SCR-MACH M3X30	2
0535-0023	NUT-HEX M4X0,7	4
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	6
40401C	ADULT CUFF	1
5040-1161	COVER BD SPO2	1
5041-4218	COVER-BD.NIBP	1
5041-4300	LBL INFO/SPO2	1

Option Parts (continued)

Component Part	Description	Qty
78352-00601	SHIELD TRAFO	1
78352-60010	PUMP ASSY	1
78352-61601	CBL AY PUMP PWR	1
78352-66538	BD AY NIBP PARAMETER	1
78354-61606	CABLE AY-SPO2	1
78354-66520	BD AY-SPO2 PARAM.	1

Socketed Parts

Component Part	Description	Qty
5181-1482	EPROM-SPO2	1
5181-1499	EPR-NBP JAPAN	1

Model: 78352C

Replaceable Parts List   3-29

Interface Option #J10 (Limited 780 Interface)

Option Parts

Component Part	Description	Qty
78353-66590	BD. AY-LTD.INTERF	1

Socketed Parts

Component Part	Description	Qty
5180-2861	EPR LIM780 SURGI	1

Interface Option #J11 (Annotating Interface)

Option Parts

Component Part	Description	Qty
78353-66592	BD AY-780 AIF	1

Socketed Parts

Component Part	Description	Qty
5180-2898[1]	EPR -780 8K	1
		or
5181-1483	EPR-780 8K ST	1
5180-2899[2]	EPR -780 16K	1
		or
5181-1484	EPR-780 16K ST	1

1 If #E15 was ordered, replace 5180-2898 with 5181-1483

2 If #E15 is ordered, replace 5180-2899 with 5181-1484.

Interface Option #J12 (SDN Interface)

Option Parts

Component Part	Description	Qty
78353-01212	BRACKET-CVR 780	-1
78353-04107	CVR-PROTECT.780	-1
78353-66594	BD CONN SDN	1
78354-66595	BD AY SDN INTERF	1

Socketed Parts

Component Part	Description	Qty
5181-1470	EPR SDN	1
5181-1472	EPR SDN MES	1

Interface Option #J13 (RS232 Interface)

Option Parts

Component Part	Description	Qty
0400-0601	GROMMET-CHANNEL	0
0515-1060	SCR-MACH M3X25	1
0515-1091	SCR M3,5X10 PAN	1
0515-1232	SCR M3.5X8 PH	-1
5061-5662	BD AY-EXT.40-PIN	0
78353-01217	BRACKET-HOLDER	1
78353-04105	COVER-AUDIO	-1
78353-04106	COVER-AUDIO/RS	1
78353-04305	LABEL-AUDIO/AUX	-1
78353-04307	LBL-AUDIO/RS+AUX	1
78354-66598	BD AY-RS232 IF	1
78354-66599	BD AY-CONN/RS232	1

Socketed Parts

Component Part	Description	Qty
5180-7485	ERP RS232	1

Instrument Model Number: 78354A

Model Description: Surgical Monitor

Basic Unit Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	2
5041-4202	KNOB-DESMOP/GRAY	7
5061-5691	COMMON UNIT 4/4	1
5180-5582	EPR ECG ADLT	1
5180-6805	PACE PULS DET.	1
5181-4702	EPR-DISPL/ENGL.	1
5181-4745	EPR CHAR GEN STD	1
78353-01212	BRACKET-CVR 780	1
78353-04107	CVR-PROTECT.780	1
78353-66503	BD AY-3CH INTERP	1
78353-66595	BD AY-SDN INTERF	0
78354-01210	BRACKET-EXT/BL.	1
78354-20220	INSTR CARD-CENT/E	1
78354-20280	INSTR.CARD LH/ENG	1
78354-40201	SUBPNL.EXT/BLANK	1
78354-66602	BD AY-DISPL/uP	1
78354-90011	INSTALL.BOOK	1
78354-91001	OPER.GUIDE/ENGL.	1
78354A #A01	ECG	0
78354A #A03	ECG,PL	0
78354A #A04	ECG,PL,PAT	0
78354A #A06	ECG,P1,P2,T1,T2	0
78354A #A08	ECG,RESP,2T	0
78354A #A10	ECG RESP,PL P2	0
78354A #A12	ECG,P1,P2,PAT	0
78354A #A14	ECG SPO2 2TEMP	0
78354A #A17	ECG SPO2 1PRESS	0
78354A #A18	ECG SPO2 AUX 1T	0
78354A #C01	NIBP	0
78354A #C02	CO2/02	0
78354A #C03	CO2 / NIBP	0
78354A #C06	DUAL PRESS	0
78354A #C16	DUAL PRESS NIBP	0
78354A #C18	2 PRESS / CO2	0
78354A #E10	TREND CAPABILITY	0

Basic Unit Parts (continued)
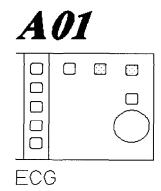
Component Part	Description	Qty
78354A #E20	PRESS.KPA	0
78354A #E21	AUX.C02/KPA	0
78354A #J10	ANALOG INTF.LIMT	0
78354A #J11	ANNOT.INTERFACE	0
78354A #J12	SDN INTERFACE	0
78354A #J13	RS232 IF	0
78354A #J20	ARRHYT.BANDWIDTH	0
9223-0514	TAPE-INDL 80MM	0

Socketed Parts

Component Part	Description	Qty
5180-5582	EPR ECG ADLT	1
5180-6805	PACE PULS DET.	1
5181-4702	EPR-DISPL/ENGL.	1
5181-4745	EPR CHAR GEN STD	1

Parameter Option: #A01 (ECG)

A01

ECG

Front Panel Parts
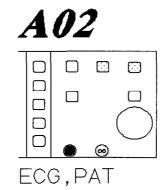
Component Part	Description	Qty
5040-1194	HSG-CONN.W.MET.	1
78354-40287	PANEL-FRNT/#A01	1
78354-66521	BD CONN F.L.ECG	1

Option Parts

Component Part	Description	Qty
5041-4237	COVER-PLSTC,AUX.	1

Parameter Option: #A02 (ECG, PAT)

A02

ECG,PAT

Front Panel Parts

Component Part	Description	Qty
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1
78354-40284	PANEL-FRNT/#A02	1
78354-66551	BD A02 ECG/PAT	1

Option Parts
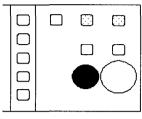
Component Part	Description	Qty
0515-1323	SCR-MAC M3X30	2
0624-0324	SCREW-TP 4-20	2
5040-1167	COVER BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	1
5041-4215	ADAPTER-PL.CONN.	1
78353-61606	CABLE AY-TEMP.II	1
78354-40201	SUBPNL.EXT/BLANK	1
78354-66552	BD AY-PL/TEM/AUX	1
78354-66556	BD AY-PAT CONN.	1

Socketed Parts

Component Part	Description	Qty
5180-5549	EPR-PL/AUX/TEMP	1

Parameter Option: #A03 (ECG,P1)

A03

ECG,P1

Front Panel Parts
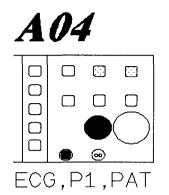
Component Part	Description	Qty
78354-66521	FRONT PANEL	1
78354-40286	FRONT PANEL	1
5040-1194	HSG-CONN.W.MET.	1
5040-1199	HOUSING-CONN.	1
78354-66531	BD CONN Pl	1

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	2
lLJ6-0001	RAM 28P16K	1
5040-1167	COVER-BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	1
5041-4237	COVER-PLSTC,AUX.	1
78353-66532	BD AY-PRESS/PAR	1
78354-66531	BD CONN Pl	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1

Parameter Option: #A04 (ECG, P1, PAT)

A04

ECG,P1,PAT

Front Panel Parts
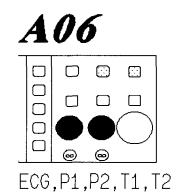
Component Part	Description	Qty
5040-1176	HSG-CONN DUAL/SL	1
78354-40290	PANEL-FRONT/A04	1
78354-66521	BD CONN F.L.ECG	1
78354-66530	BD CONN-1P/PAT	1
5040-1194	HSG-CONN.W.MET	1
5040-1199	HOUSING-CONN	1

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	2
0624-0324	SCREW-TPG 4-20	2
1LJ6-0001	RAM 28P16K	1
5040-1167	COVER-BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	2
5041-4215	ADAPTER-PL.CONN.	1
78353-66532	BD AY-PRESS/PAR	1
78354-66552	BD AY-PL/TEM/AUX	1
78354-66556	BD AY-PAT CONN.	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5549	EPR-PL/AUX/TEMP	1

Parameter Option: #A06 (ECG, P1, P2, T1, T2)

A06

ECG,P1,P2,T1,T2

Front Panel Parts
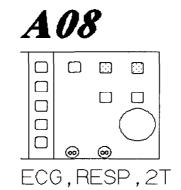
Component Part	Description	Qty
78354-40289	FRONT PANEL	1
5040-1194	HSG-CONN.W.MET	1
5040-1176	HSG-CONN DUAL/SL	1
78354-66521	BD CONN F.L.ECG	1
78354-66553	BD-CONN.2PR,2TEM	1

Option Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	1
0624-0324	SCREW-TPG 4-20	4
1LJ6-0001	RAM 28P16K	1
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	2
5041-4216	ADAPTER-TEMP.CON	2
5041-4237	COVER-PLSTC,AUX.	1
78353-01207	BRACKET-TEMP CON	1
78353-61606	CABLE AY-TEMP.II	2
78353-66534	BD-DUAL PRES PAR	1
78354-66554	BD-DUAL,TEMP.PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5544	EPR-64K/TEMP	1

Parameter Option: #A08 (ECG, RESP, 2T)

A08

ECG, RESP, 2T

Front Panel Parts
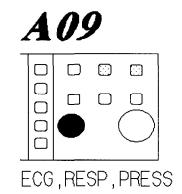
Component Part	Description	Qty
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1
78354-40283	PANEL-FRNT/#A08	1
78354-66565	BD CON ECG/R/2XT	1

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	1
0515-1323	SCR-MACH M3X30	2
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	2
5041-4216	ADAPTER-TEMP.CON	1
5041-4237	COVER-PLSTC,AUX.	1
78353-01207	BRACKET-TEMP CON	1
78353-61606	CABLE AY-TEMP.II	2
78354-66554	BD-DUAL,TEMP.PAR	1
78832-66562	BD AY-RESP.	1

Socketed Parts

Component Part	Description	Qty
5180-5542	EPROM-RESP.	1
5180-5543	EPROM-RESP.	1
5180-5544	EPR-64K/TEMP	1

Parameter Option: #A09 (ECG, RESP, 1 PRESS)
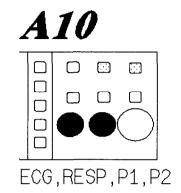
A09

ECG , RESP , PRESS

Front Panel Parts

Component Part	Description	Qty
5040-1179	SPACER	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1
78354-40285	PANEL-FRNT/#A09	1
78354-66566	BD-ECG,RESP,1PRE	1

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	1
0515-1323	SCR-MACH M3X30	2
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	2
5041-4237	COVER-PLSTC,AUX.	1
78353-66532	BD AY-PRESS/PAR	1
78354-40201	SUBPNL.EXT/BLANK	1
78832-66562	BD AY-RESP.	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5542	EPROM-RESP.	1
5180-5543	EPROM-RESP.	1

Parameter Option: #A10 (ECG, RESP, P1, P2)

A10

ECG,RESP,P1,P2

Front Panel Parts
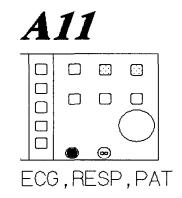
Component Part	Description	Qty
78354-40291	PANEL FRONT #A10	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1
78354-66563	BD-R.2XPR./AIO	1

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	1
ILJ6-0001	RAM 28P16K	1
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	2
5041-4237	COVER-PLSTC,AUX.	1
78353-66534	BD-DUAL PRES PAR	1
78832-66562	BD AY-RESP.	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5542	EPROM-RESP.	1
5180-5543	EPROM-RESP.	1

Parameter Option: #A11 (ECG, RESP, PAT)

A11

ECG,RESP,PAT

Front Panel Parts
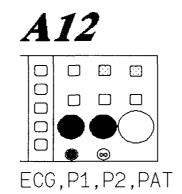
Component Part	Description	Qty
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1
78354-40282	PANEL-FRNT/#All	1
78354-66564	BD-ECG/R/PAT/All	1

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	2
0624-0324	SCREW-TPG 4-20	2
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	2
5041-4215	ADAPTER-PL.CONN.	1
78353-61606	CABLE AY-TEMP.II	1
78354-40201	SUBPNL.EXT/BLANK	1
78354-66552	BD AY-PL/TEM/AUX	1
78354-66556	BD AY-PAT CONN.	1
78832-66562	BD AY-RESP.	1

Socketed Parts

Component Part	Description	Qty
5180-5542	EPROM-RESP.	1
5180-5543	EPROM-RESP.	1
5180-5549	EPR-PL/AUX/TEMP	1

Parameter Option: #A12 (ECG, P1, P2, PAT)

A12

ECG,P1,P2,PAT

Front Panel Parts

Component Part	Description	Qty
5040-1176	HSG-CONN DUAL/SL	1
5040-1194	HSG-CONN.W.MET.	1
78354-40281	PANEL-FRNT/#A12	1
78354-66521	BD CONN F.L.ECG	1
78354-66533	BD-DUAL PRES/PAT	1

Option Parts
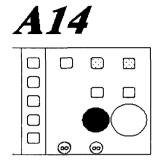
Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	2
0515-1323	SCR-MACH M3X30	2
0624-0324	SCREW-TPG 4-20	2
ILJ6-0001	RAM 28P16K	2
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	2
5041-4215	ADAPTER-PL.CONN.	1
78353-61606	CABLE AY-TEMP.II	1
78353-66534	BD-DUAL PRES PAR	1
78354-66552	BD AY-PL/TEM/AUX	1
78354-66556	BD AY-PAT CONN.	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5549	EPR-PL/AUX/TEMP	1

Parameter Option: #A14 (ECG, SPO2, 2TEMP)

A14

ECG,SpO2,2TEMP

Front Panel Parts
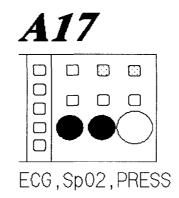
Component Part	Description	Qty
5040-1179	SPACER	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1
78354-40292	PNL FRNT PLASTIC	1
78354-66512	CONBD ECG 2T SPO2	1

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	2
0515-1323	SCR-MACH M3X30	4
5040-1161	COVER BD SP02	1
5040-1167	COVER-BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	1
5041-4216	ADAPTER-TEMP.CON	1
5041-4237	COVER-PLSTC,AUX.	1
78353-01207	BRACKET-TEMP CON	1
78353-61606	CABLE AY-TEMP.II	1
78354-66510	BD AY PARAM.SP02	1
78354-66554	BD-DUAL,TEMP.PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5544	EPR-64K/TEMP	1
5180-5597	(P)AT - SW	1
5181-1403	EPROM SP02	1

Parameter Option: #A17 (ECG, SPO2, 1PRESS)

A17

ECG,SpO2,PRESS

Front Panel Parts
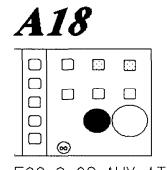
Component Part	Description	Qty
78354-40294	PNL FRNT PLASTIC	1
5040-1194	HSG-CONN.W.MET.	1
5040-1199	HOUSING-CONN.	1
78354-66511	BD AY CONN SP02	1
78354-66521	BD CONN F.L.ECG	1
78354-66531	BD CONN Pl	1

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	6
5040-1161	COVER BD SP02	1
5040-1167	COVER-BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	2
5041-4237	COVER-PLSTC,AUX-	1
78353-66532	BD AY-PRESS/PAR	1
78354-66510	BD AY PARAM-SPO2	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5181-1403	EPROM SPO2	1

Parameter Option: #A18 (ECG, SPO2, AUX, 1T)

A18

ECG,SpO2,AUX,1T

Front Panel Parts

Component Part	Description	Qty
78354-40293	PNL FRNT PLASTIC	1
5040-1179	SPACER	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1
78354-66513	CONBD ECG/IT/SAO	1
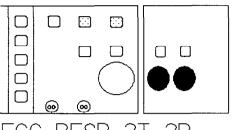
Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	4
5040-1161	COVER BD SPO2	1
5040-1167	COVER-BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	2
78354-66510	BD AY PARAM.SPO2	1
78354-66552	BD AY-PL/TEM/AUX	1

Socketed Parts

Component Part	Description	Qty
5180-5549	EPR-PL/AUX/TEMP	1
5181-1403	EPROM SPO2	1

Parameter Option: #A21 (ECG, RESP, 2T, 2P)

A21

ECG, RESP, 2T, 2P

Front Panel Parts

Component Part	Description	Qty
78354-40253	PANEL-FRONT,1/4	1
78354-40283	PANEL-FRNT/#A08	1
3131-0485	SWITCH AY-4 KEY	1
5040-1176	HSG-CONN DUAL/SL	2
5040-1184	HSG-CONN-MET/L.H	1
78354-66533	BD-DUAL PRES/PAT	1
78354-66565	BD CON ECG/R/2XT	1

Option Parts

Component Part	Description	Qty
78354-40202	PANEL-SUB/EXTEND	1
0515-0897	SCR-MACH.M3X8MM	1
0515-1323	SCR-MACH M3X30	4
3101-2813	SWITCH AY.-DUAL	1
5040-1167	COVER-BD./METAL.	3
5041-4202	KNOB-DESMOP/GRAY	2
5041-4216	ADAPTER-TEMP.CON	1
5041-4237	COVER-PLSTC,AUX.	1
78353-01207	BRACKET-TEMP CON	1
78353-61606	CABLE AY-TEMP.II	2
78353-66534	BD-DUAL PRES PAR	1
78354-66554	BD-DUAL,TEMP.PAR	1
78832-66562	BD AY-RESP.	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5542	EPROM-RESP.	1
5180-5543	EPROM-RESP.	1
5180-5544	EPR-64K/TEMP	1
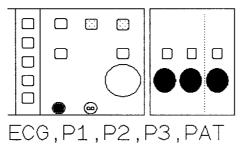
Parameter Option: #A22 (ECG, P1/2/3, PAT)

A22

ECG , P1 , P2 , P3 , PAT

Front Panel Parts

Component Part	Description	Qty
78354-40252	PANEL-FRNT/PLAST	1
78354-40284	PANEL-FRNT/#A02	1
5040-1176	HSG-CONN DUAL/SL	2
5040-1184	HSG-CONN-MET/L.H	1
5040-1199	HOUSING-CONN.	1
78354-66531	BD CONN P1	1
78354-66533	BD-DUAL PRES/PAT	1
78354-66551	BD A02 ECG/PAT	1
3131-0485	SWITCH AY-4 KEY	1

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	4
0515-1323	SCR-MACH M3X30	6
0624-0324	SCREW-TPG 4-20	2
5040-1167	COVER-BD./METAL.	3
5041-4202	KNOB-DESMOP/GRAY	4
5041-4215	ADAPTER-PL.CONN.	1
78353-61606	CABLE AY-TEMP.II	1
78353-66532	BD AY-PRESS/PAR	1
78353-66534	BD-DUAL PRES PAR	1
78354-40202	PANEL-SUB/EXTEND	1
78354-66552	BD AY-PL/TEM/AUX	1
78354-66556	BD AY-PAT CONN.	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5549	EPR-PL/AUX/TEMP	1
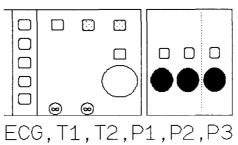
Parameter Option: #A23 (ECG, T1/2, P1/2/3)

A23

ECG, T1, T2, P1, P2, P3

Front Panel Parts

Component Part	Description	Qty
78354-40252	PANEL-FRNT/PLAST	1
78354-40288	PANEL-FRNT/#A23	1
3131-0485	SWITCH AY-4 KEY	1
5040-1176	HSG-CONN DUAL/SL	2
5040-1184	HSG-CONN-MET/L.H	1
5040-1199	HOUSING-CONN.	1
78354-66531	BD CONN P1	1
78354-66533	BD-DUAL PRES/PAT	1
78354-66550	BD CONN ECG 2TEM	1
78354-66554	BD-DUAL,TEMP.PAR	1
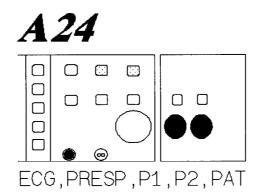
Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	5
0515-1323	SCR-MACH M3X30	6
5040-1167	COVER-BD./METAL.	3
5041-4202	KNOB-DESMOP/GRAY	3
5041-4216	ADAPTER-TEMP.CON	1
5041-4237	COVER-PLSTC,AUX.	1
78353-01207	BRACKET-TEMP CON	1
78353-61606	CABLE AY-TEMP.II	2
78353-66532	BD AY-PRESS/PAR	1
78353-66534	BD-DUAL PRES PAR	1
78354-40202	PANEL-SUB/EXTEND	1
78354-66554	BD-DUAL,TEMP.PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5544	EPR-64K/TEMP	1

Parameter Option: #A24 (ECG, RES, P1/2,PAT)

A24

ECG,PRESP,P1,P2,PAT

Front Panel Parts

Component Part	Description	Qty
78354-40253	PANEL-FRONT,1/4	1
78354-40282	PANEL-FRNT/#All	1
3131-0485	SWITCH AY-4 KEY	0
5040-1176	HSG-CONN DUAL/SL	2
5040-1184	HSG-CONN-MET/L.H	1
78354-66533	BD-DUAL PRES/PAT	1
78354-66564	BD-ECG/R/PAT/All	1

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	4
0515-1323	SCR-MACH M3X30	4
0624-0324	SCREW-TPG 4-20	2
3101-2813	SWITCH AY.-DUAL	1
5040-1167	COVER-BD./METAL.	3
5041-4202	KNOB-DESMOP/GRAY	4
5041-4215	ADAPTER-PL.CONN.	1
78353-61606	CABLE AY-TEMP.II	1
78353-66534	BD-DUAL PRES PAR	1
78354-40202	PANEL-SUB/EXTEND	1
78354-66552	BD AY-PL/TEM/AUX	1
78354-66556	BD AY-PAT CONN.	1
78832-66562	BD AY-RESP.	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5542	EPROM-RESP.	1
5180-5543	EPROM-RESP.	1
5180-5549	EPR-PL/AUX/TEMP	1

Module Option: #C01 (NIBP)

C01

NIBP

Front Panel Parts

Component Part	Description	Qty
78354-40211	PNL-FRNT/FRENCH	0.9
78354-40241	PANEL FRNT PLAST	0.1
3101-2919	SWITCH AY-4KEY	1
78354-60005	CONNECTOR-AIR	1
78354-66538	BD AY-LED FRONT	1

Option Parts
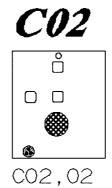
Component Part	Description	Qty
0363-0170	GASKETING RFI	0.1
0460-1456	TAPE-INDL 1IN	0.06
0515-0886	SCR-MACH.M3X6MM	4
0515-1232	SCR M3.5X8 PH	2
0535-0023	NUT-HEX M4X0,7	4
0624-0343	SCR-TPG	2
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	4
40401C	ADULT CUFF	1
5041-4202	KNOB-DESMOP/GRAY	2
5041-4218	COVER-BD.NIBP	1
5061-5624	CBL AY FL-10CONT	1
5061-5661	TUBING CUFF ASSY	1
78352-00601	SHIELD TRAFO	1
78352-02302	HOLDER-PUMP	1

Option Parts (continued)

Component Part	Description	Qty
78352-60002	PUMP DC	1
78352-61601	CBL AY PUMP PWR	1
78352-61602	CBL AY PUMP CONT	1
78352-66535	BD AY NIBP PARA	1
78352-66537	BD AY-PUMP CONTR	1
78352-66539	BD AY PUMP FILTER	1
78354-20240	INSTR CARD RH/ENG	0.66
78354-20241	INSTR.CARD RH/FR	0.13
78354-20242	INSTR.CARD RH/G.	0.07
78354-20243	INSTR.CARD RH/D.	0.04
78354-20244	INSTR.CARD RH/SP	0.05
78354-20245	INSTR.CARD RH/I.	0.02
78354-20246	INSTR.CARD RH/SWED	0.01
78354-20247	INSTR.CARD RH/FI	0.01
78354-20250	INSTR.CARD RH/J.	0.01
78354-40201	SUBPNL.EXT/BLANK	-1
78354-40202	PANEL-SUB/EXTEND	1
78354-60006	TUBING AY.INTERN	1

Socketed Parts

Component Part	Description	Qty
5180-5595	EPROM NIBP	1

4/4 Module Option: #CO2 (CO2/O2)

CO2, O2

Front Panel Parts

Component Part	Description	Qty
78354-40222	PANEL-FRONT/C02	1
3131-0485	SWITCH AY-4 KEY	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1179	SPACER	1
78354-61601	CBL-C02 LED FRNT	1
78354-66543	BD-CONN C02/02	1
78354-66544	BD-CO2 LED FRNT	1

Option Parts

Component Part	Description	Qty
0362-0695	TEM.QUICK MALE	1
0515-0886	SCR-MACH.M3X6MM	3
0515-0887	SCR M3.5X0.6	1
0515-0897	SCR-MACH.M3X8MM	3
0515-1323	SCR-MACH M3X30	2
0624-0324	SCREW-TPG 4-20	2
1820-4571	HD63701V0P	1
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	3
5180-5599	MP6870IL	0
78345-90011	QUICK REF.GUIDE	1
78354-20260	I.CARD-RH;C02/EN	0.6
78354-20261	INSTR.CARD RH/FR	0.15
78354-20262	INSTR.CARD RH/GER	0.1
78354-20263	INST.CARD RH/DUT	0.05

Option Parts (continued)

Component Part	Description	Qty
78354-20264	INSTR.CARD RH/SPA	0.05
78354-20265	INSTR.CARD RH/ITA	0.05
78354-20267	INSTR CRD RH/FIN	0.01
78354-20270	INSTR.CRD RH/JAP	0.01
78354-40201	SUBPNL.EXT/BLANK	-1
78354-40202	PANEL-SUB/EXTEND	1
78356-66540	BD AY-C02	1
78356-66541	BD AY-02	1

Socketed Parts
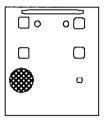
Component Part	Description	Qty
5181-1462	EPROM C02/02	1

4/4 Module Option: #C03 (C02/NIBP)

C03

C02,NIBP

Front Panel Parts

Component Part	Description	Qty
78354-40223	PANEL FRNT ENGL.	0.85
78354-40224	PANEL FRONT FREN	0.15
78354-60005	CONNECTOR-AIR	1
78354-66538	BD AY-LED FRONT	1
78354-66546	BD AY CONN C02	1
3101-2910	SWITCH AY 4 KEY	1
5040-1184	HSG-CONN-MET/LH	1
78354-61601	CBL-CO2 LED FRONT	1
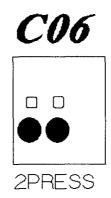
Option Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	6
0515-0898	SCR-MACH M4X0.7	2
0515-1232	SCR M3.5X8 PH	1
0515-1323	SCR-MACH M3X30	2
0535-0023	NUT-HEX M4X0,7	4
0624-0324	SCREW-TPG 4-20	2
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
1820-4571	HD63701V0P	1
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	6
40401C	ADULT CUFF	1

Option Parts (continued)

Component Part	Description	Qty
5040-1167	COVER-BD./METAL.	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1179	SPACER	1
5041-4202	KNOB-DESMOP/GRAY	4
5041-4218	COVER-BD.NIBP	1
5061-5624	CBL AY FL-10CONT	1
5061-5661	TUBING CUFF ASSY	1
78345-90011	QUICK REF.GUIDE	1
78352-00601	SHIELD TRAFO	1
78352-02302	HOLDER-PUMP	1
78352-60002	PUMP DC	1
78352-61601	CBL AY PUMP PWR	1
78352-61602	CBL AY PUMP CONT	1
78352-66535	BD AY NIBP PARA	1
78352-66537	BD AY-PUMP CONTR	1
78352-66539	BD AY PUMP FILTER	1
78354-20300	INSTR.CARD RH/ENG	.6
78354-20301	INSTR CARD RH/FRE	0.15
78354-20302	INSTR.CARD RH/GER	0.1
78354-20303	INSTR.CARD RH/DUT	0.05
78354-20304	INSTR.CARD RH/SPA	0.03
78354-20305	INSTR.CARD RH/ITA	0.05
78354-20307	INSTR.CARD RH/FINN	0.01
78354-20310	INSTR.CARD RH/JAP	0.02
78354-40201	SUBPNL.EXT/BLANK	-1
78354-40202	PANEL-SUB/EXTEND	1
78354-60006	TUBING AY.INTERN	1
78354-61601	CBL-C02 LED FRNT	1
78354-90022	SERV.SUPPL./C03	1

Socketed Parts

Component Part	Description	Qty
5180-5595	EPROM NIBP	1
5180-5599	MP6870IL	1
5181-1462	EPROM C02/02	1

4/4 Module Option: #C06 (Dual PRESS)

C06

2PRESS

Front Panel Parts

Component Part	Description	Qty
5040-1176	HSG-CONN DUAL/SL	1
78354-40253	PANEL-FRONT,1/4	1
78354-66533	BD-DUAL PRES/PAT	1
3131-0485	SWITCH AY-4 KEY	1
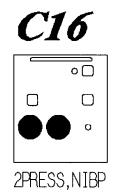
Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	4
0515-1323	SCR-MACH M3X30	2
ILJ6-0001	RAM 28P16K	1
5040-1167	COVER-BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	2
78353-66534	BD-DUAL PRES PAR	1
78354-40201	SUBPNL.EXT/BLANK	-1
78354-40202	PANEL-SUB/EXTEND	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1

4/4 Module Option: #C16 (Dual PRESS, NIBP)

C16

2PRESS,NIBP

Front Panel Parts

Component Part	Description	Qty
3101-2910	SWITCH AY 4 KEY	1
5040-1176	HSG-CONN DUAL/SL	1
78354-40230	PANEL FRONT PLAS	0.85
78354-40231	FRONT PANEL/FREN	0.15
78354-60005	CONNECTOR-AIR	1
78354-66538	BD AY-LED FRONT	1
78354-66562	BD DUAL PR #288	1

Option Parts

Component Part	Description	Qty
0363-0170	GASKETING RFI	0.1
0460-1455	TAPE-INDL .5IN-W	0.05
0515-0886	SCR-MACH.M3X6MM	6
0515-0898	SCR-MACH M4X0.7	2
0515-1232	SCR M3.5X8 PH	1
0515-1323	SCR-MACH M3X30	2
0535-0023	NUT-HEX M4X0,7	4
0624-0324	SCREW-TPG 4-20	2
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
1LJ6-0001	RAM 28P16K	1
2190-0413	WASH-LK EXT.	1
2190-0586	WASH LOCK M4	6
40401C	ADULT CUFF	1
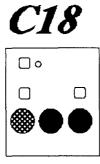
Option Parts (continued)

Component Part	Description	Qty
5040-1167	COVER-BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	3
5041-4218	COVER-BD.NIBP	1
5061-5624	CBL AY FL-10CONT	1
5061-5661	TUBING CUFF ASSY	1
78352-00601	SHIELD TRAFO	1
78352-02302	HOLDER-PUMP	1
78352-60002	PUMP DC	1
78352-61601	CBL AY PUMP PWR	1
78352-61602	CBL AY PUMP CONT	1
78352-66535	BD AY NIBP PARA	1
78352-66537	BD AY-PUMP CONTR	1
78352-66539	BD AY PUMP FILTER	1
78353-66534	BD-DUAL PRES PAR	1
78354-20240	INSTR. CARD RH/ENG	0.3
78354-20241	INSTR. CARD RH/FR	0.25
78354-20242	INSTR.CARD RH/G.	0.17
78354-20243	INSTR.CARD RH/D.	0.1
78354-20244	INSTR.CARD RH/SP	0.08
78354-20245	INSTR.CARD RH/I.	0.1
78354-40201	SUBPNL.EXT/BLANK	-1
78354-40202	PANEL-SUB/EXTEND	1
78354-60006	TUBING AY.INTERN	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5595	EPROM NIBP	1

Parameter Option: #C18 (2PRESS, C02)

C18

C02, 2PRESS

Front Panel Parts

Component Part	Description	Qty
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1
78354-40225	PANEL FRONT PLST	1
78354-66546	BD AY CONN C02	1
78354-66562	BD DUAL PR #288	1
3101-2910	SWITCH AY 4 KEY	1
78354-61601	CBL-CO2 LED FRONT	1

Option Parts

Component Part	Description	Qty
0362-0695	TEM.QUICK MALE	1
0515-1232	SCR M3.5X8 PH	1
0515-1323	SCR-MACH M3X30	4
ILJ6-0001	RAM 28P16K	1
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	3
78345-90011	QUICK REF.GUIDE	1
78353-66534	BD-DUAL PRES PAR	1
78354-20260	I.CARD-RH;C02/EN	0.6
78354-20261	INSTR. CARD RH/FR	0.15
78354-20262	INSTR. CARD RH/GER	0.1
78354-20263	INSTR. CARD RH/DUT	0.05
78354-20264	INSTR. CARD RH/SPA	0.03
78354-20265	INSTR. CARD RH/ITA	0.04

Option Parts (continued)

Component Part	Description	Qty
78354-20267	INSTR. CARD RH/FIN	0.01
78354-20270	INSTR. CARD RH/JAP	0.02
78354-40201	SUBPNL.EXT/BLANK	-1
78354-40202	PANEL-SUB/EXTEND	1
78356-66540	BD AY-CO2	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5181-1462	EPROM C02/02	1

Interface Option: #J10 (Limited Analog Interface)

Option Parts

Component Part	Description	Qty
78353-66590	BD.AY-LTD.INTERF	1

Socketed Parts

Component Part	Description	Qty
5180-2872	EPR 8.8K/LTD 780	1

Interface Option: #J11 (Annot. Interface)

Option Parts

Component Part	Description	Qty
78353-66592	BD AY-780 AIF	1

Socketed Parts

Component Part	Description	Qty
5180-2898	EPR -780 8K	1
5180-2899	EPR -780 16K	1

Interface Option: #J12 (SDN Interface)

Option Parts

Component Part	Description	Qty
78353-01212	BRACKET-CVR 780	-1
78353-04107	CVR-PROTECT.780	-1
78353-66594	BD CONN SDN	1
78353-66595	BD AY-SDN INTERF	1

Socketed Parts

Component Part	Description	Qty
5181-1450	EPR SDN	1
5181-1452	EPR SDN MES	1

Interface Option: #J13 (RS232 Interface)

Option Parts

Component Part	Description	Qty
0400-0601	GROMMET-CHANNEL	0.05
0515-1091	SCR M3, 5X10 PAN	1
0515-1232	SCR M3.5X8 PH	-1
5061-5662	BD AY-EXT.40-PIN	0
78353-01217	BRACKET-HOLDER	1
78354-01210	BRACKET-EXT/BL.	-1
78354-01211	BRACKET-EXT./RS	1
78354-66598	BD AY-RS232 IF	1
78354-66599	BD AY-CONN/RS232	1
78354-67002	PROGR KIT RS232	0
78354-90015	PROGR.GUIDE	0

Socketed Parts

Component Part	Description	Qty
5180-7485	EPR RS232	1

Instrument Model Number: 78354C

Model Description: Patient Monitor (Adult)

Basic Unit Parts
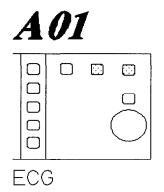
Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	1
0515-1323	SCR-MACH M3X30	2
5021-3646	SPACER	1
5041-4209	PNL FRONT FILTER	1
5061-8328	COMMON UNIT 4/4	1
78353-01212	BRACKET-CVR 780	1
78353-04107	CVR-PROTECT.780	1
78353-66503	BD AY-3CH INTERP	1
78354-01210	BRACKET-EXT/BL.	1
78354-66702	BD AY DISPL/UP	1
78354-9011A	INSTALLATION GUIDE	1
78834-66510	BD AY LED ALARM	1
78834-66519	BD AY BATTERY	1

Socketed Parts

Component Part	Description	Qty
5181-0860[1]	EPR 1 STD	1
		or
5181-4772	EPR ECG and ST STD	1
5181-1464[2]	EPR-ECG ADLT	1
		or
5181-4750	EPR ECG/ST	1
5181-0891	EPR SW ENG 78354/834C	0

1 If #E15 ordered, replace 5181-0860 with 5181-4772
2 If #E15 ordered, replace 5181-1464 with 5181-4750
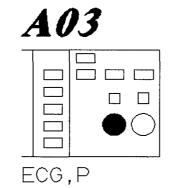
Parameter Option: #A01 (ECG)

A01

ECG

Front Panel Parts

Component Part	Description	Qty
78354-61901 (T)	TEXT FRONT PANEL	1
		or
78354-61931 (S)	SYMBOL FRONT PANEL	1
78354-66621	BD AY CONN ECG	1
5040-1194	HSG-CONN.W.MET.	1

Option Parts

Component Part	Description	Qty
5041-4237	COVER-PLSTC, AUX.	1

Parameter Option: #A03 (ECG, P1)

A03

ECG,P

Front Panel Parts
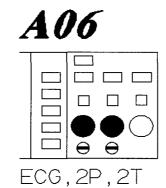
Component Part	Description	Qty
78354-61902 (T)	TEXT FRONT PANEL	1
		or
78354-61932 (S)	SYMBOL FRONT PANEL	1
78354-66621	BD AY CONN ECG	1
78354-66531	BD CONN PI	1
5040-1194	HSG-CONN. W. MET.	1
5040-1199	HOUSING CONN.	1

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	2
5040-1167	COVER-BD./METAL.	1
5041-4237	COVER-PLSTC,AUX.	1
78353-66532	BD AY-PRESS/PAR	1
78354-66531	BD CONN P1	1
78354-66621	BD AY CONN ECG	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
1LJ6-0001	RAM 28P16K	1

Parameter Option: #A06 ECG,P1,P2,T1,T2

A06

ECG, 2P, 2T

Front Panel Parts
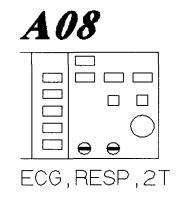
Component Part	Description	Qty
78354-61903 (T)	TEXT FRONT PANEL	1
		or
78354-61933 (S)	SYMBOL FRONT PANEL	1
78354-66621	BD AY CONN ECG	1
78354-66553	BD-CONN.2PR,2TEM	1
5040-1194	HSG-CONN.W.MET.	1
5040-1176	HSG-CONN DUAL/SL	1
78353-61606	CABLE AY-TEMP.II	2

Option Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	1
0624-0324	SCREW-TPG 4-20	4
5040-1167	COVER-BD./METAL.	2
5041-4216	ADAPTER-TEMP.CON	2
5041-4237	COVER-PLSTC,AUX.	1
78353-01207	BRACKET-TEMP CON	1
78353-66534	BD-DUAL PRES PAR	1
78354-66554	BD-DUAL,TEMP.PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5544	EPR-64K/TEMP	1

Parameter Option: #A08 ECG RESP 2T

A08

ECG, RESP, 2T

Front Panel Parts
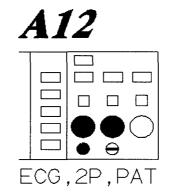
Component Part	Description	Qty
78834-61902 (T)	TEXT FRONT PANEL	1
		or
78834-61932 (S)	SYMBOL FRONT PANEL	1
78354-66555	BD CONN ECG 2T	1
5040-1176	HSG-CONN DUAL/SL	1
78353-61606	CABLE AY-TEMP.II	2

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	1
0515-1323	SCR-MACH M3X30	2
5040-1167	COVER-BD./METAL.	2
5041-4216	ADAPTER-TEMP.CON	1
5041-4237	COVER-PLSTC,AUX.	1
78353-01207	BRACKET-TEMP CON	1
78354-66554	BD-DUAL,TEMP.PAR	1
78832-66562	BD AY-RESP.	1

Socketed Parts

Component Part	Description	Qty
5180-5544	EPR-64K/TEMP	1
5181-1465	EPR-RESP0.1	1
5181-1466	EPR-RESP.2	1

Parameter Option: #A12 ECG P1,P2,PAT

A12

ECG , 2P , PAT

Front Panel Parts
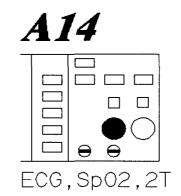
Component Part	Description	Qty
78354-61904 (T)	TEXT FRONT PANEL	1
		or
78354-61934 (S)	SYMBOL FRONT PANEL	1
78354-66621	BD AY CONN ECG	1
78354-66533	BD-DUAL PRES/PAT	1
5040-1194	HSG-CONN.W.MET.	1
5040-1176	HSG-CONN DUAL/SL	1
5041-4215	ADAPTER-PL.CONN.	1
78353-61606	CABLE AY-TEMP.II	1

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	2
0515-1323	SCR-MACH M3X30	2
0624-0324	SCREW-TPG 4-20	2
5040-1167	COVER-BD./METAL.	2
5041-4215	ADAPTER-PL.CONN.	1
78354-66552	BD AY-PL/TEM/AUX	1
78354-66556	BD AY-PAT CONN.	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5549	EPR-PL/AUX/TEMP	1

Parameter Option: #A14 ECG SPO2 2TEMP

A14

ECG, SpO2, 2T

Front Panel Parts
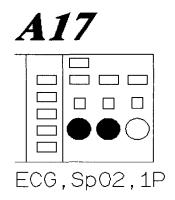
Component Part	Description	Qty
78354-61905 (T)	TEXT FRONT PANEL	1
		or
78354-61935 (S)	SYMBOL FRONT PANEL	1
78354-66514	BD AY SPO2 2T	1
78354-66621	BD AY CONN ECG	1
5040-1194	HSG-CONN.W.MET.	1
5040-1176	HSG-CONN DUAL/SL	1
78353-61606	CABLE AY-TEMP.II	2

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	2
0515-1323	SCR-MACH M3X30	4
5040-1161	COVER BD SPO2	1
5040-1167	COVER-BD./METAL.	1
5040-1179	SPACER	1
5041-4216	ADAPTER-TEMP.CON	1
5041-4237	COVER-PLSTC,AUX.	1
5041-4300	LBL INFO/SPO2	1
78353-01207	BRACKET-TEMP CON	1
78354-61606	CABLE AY-SPO2	1
78354-66520	BD AY-SPO2 PARAM.	1
78354-66554	BD-DUAL,TEMP.PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5544	EPR-64K/TEMP	1
5181-1482	EPROM-SPO2	1

Parameter Option: #A17 ECG SPO2 1PRESS

A17

ECG,SpO2,1P

Front Panel Parts
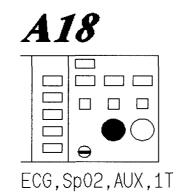
Component Part	Description	Qty
78354-61906 (T)	TEXT FRONT PANEL	1
		or
78354-61936 (S)	SYMBOL FRONT PANEL	1
78354-66511	BD AY CONN SPO2	1
78354-66621	BD AY CONN ECG	1
78354-66531	BD CONN P1	1
5040-1194	HSG-CONN.W.MET.	1
5040-1199	HOUSING-CONN.	2

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	6
5040-1161	COVER BD SPO2	1
5040-1167	COVER-BD./METAL.	1
5041-4237	COVER-PLSTC,AUX.	1
5041-4300	LBL INFO/SPO2	1
78353-66532	BD AY-PRESS/PAR	1
78354-61606	CABLE AY-SPO2	1
78354-66621	BD AY CONN ECG	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5181-1482	EPROM-SPO2	1
1LJ6-0001	RAM 28P16K	1

Parameter Option: #A18 ECG SPO2 AUX 1T

A18

ECG,SpO2,AUX,1T

Front Panel Parts
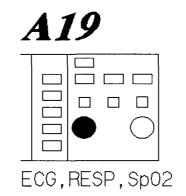
Component Part	Description	Qty
78354-61907 (T)	TEXT FRONT PANEL	1
		or
78354-61937 (S)	SYMBOL FRONT PANEL	1
78354-66515	BD AY AUXT SPO2	1
78354-66621	BD AY CONN ECG	1
5040-1184	HSG-CONN-MET/LH	0
5040-1176	HSG-CONN DUAL/SL	1
5040-1179	SPACER	1
78354-61606	CABLE AY-SPO2	1

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	4
5040-1161	COVER BD SPO2	1
5040-1167	COVER-BD./METAL.	1
5040-1194	HSG-CONN.W.MET.	1
5041-4300	LBL INFO/SPO2	1
78354-61606	CABLE AY-SPO2	1
78354-66520	BD AY-SPO2 PARAM.	1
78354-66552	BD AY-PL/TEM/AUX	1

Socketed Parts

Component Part	Description	Qty
5180-5597	EPR-PL/AUX/TEMP.	1
5181-1482	EPROM-SPO2	1
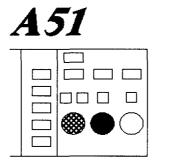
Parameter Option: #A19 ECG RESP SPO2

A19

ECG, RESP, SpO2

Front Panel Parts

Component Part	Description	Qty
78834-61905 (T)	TEXT FRONT PANEL	1
		or
78834-61935 (S)	SYMBOL FRONT PANEL	1
78354-66511	BD AY CONN SPO2	1
78354-66523	BD ECG RESP ADLT	1
5040-1179	SPACER	1
5040-1184	HSG-CONN-MET/L.H	1
5040-1185	HSG CONN-MET/R.H	1
5040-1199	HOUSING-CONN.	1

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	4
78832-66562	BD AY-RESP.	1

Socketed Parts

Component Part	Description	Qty
5181-1465	EPR-RESP0.1	1
5181-1466	EPR-RESP.2	1
5181-1481	EPROM-SPO2	1

Parameter Option: #A51 ECG CO2 SPO2

A51

ECG, SpO2, CO2

Front Panel Parts
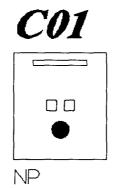
Component Part	Description	Qty
78354-61911 (T)	TEXT FRONT PANEL	1
		or
78354-61941 (S)	SYMBOL FRONT PANEL	1
78354-66511	BD AY CONN SPO2	1
78354-66621	BD AY CONN ECG	1
78354-66546	BD AY CONN CO2	1
78354-66548	BD AY LED.A51	1
5040-1184	HSG-CONN-MET/L.H	1
5040-1194	HSG-CONN.W.MET.	1
5040-1199	HOUSING-CONN.	1

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	4
1251-5390	CONN 4 PIN F	1
5041-4300	LBL INFO/SPO2	1
78354-61606	CABLE AY-SPO2	1
78354-66520	BD AY-SPO2 PARAM.	1
78356-66540	BD AY-CO2	1
78834-66510	BD AY LED ALARM	1

Socketed Parts

Component Part	Description	Qty
5181-1482	EPROM-SPO2	1

Parameter Option: #C01 NIBP

C01

NP

Front Panel Parts

Component Part	Description	Qty
78354-60007	CONN.PNEUMATIC	1
78354-61961	MEMB.SWT-P-C01-T	1
78354-66547	BD AY LED FRONT	1

Option Parts

Component Part	Description	Qty
0460-1455	TAPE-INDL .5IN-W	0
0515-0886	SCR-MACH.M3X6MM	4
0515-1232	SCR M3.5X8 PH	2
0535-0023	NUT-HEX M4X0,7	4
0535-0042	NUT-HEX M3X0.5	2
0624-0343	SCR-TPG	4
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	4
40401C	ADULT CUFF	1
5041-4218	COVER-BD.NIBP	1
5061-5624	CBL AY FL-10CONT	1
78352-00601	SHIELD TRAFO	1
78352-60010	PUMP ASSY	1
78352-61601	CBL AY PUMP PWR	1
78352-66538	BD AY NIBP PARAMETER	1
78354-40205	SUBPANEL EXT	1

Socketed Parts

Component Part	Description	Qty
5181-1499	EPR-NBP JAPAN	1

Parameter Option: #C02 CO2/O2

C02

C02,02

Front Panel Parts

Component Part	Description	Qty
78354-61962	MEMB.SWT-P-C02-T	1
78354-66543	BD-CONN CO2/O2	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1179	SPACER	1

Option Parts

Component Part	Description	Qty
0362-0695	TEM.QUICK MALE	1
0515-0886	SCR-MACH.M3X6MM	3
0515-0887	SCR M3.5X0.6	1
0515-0897	SCR-MACH.M3X8MM	3
0515-1323	SCR-MACH M3X30	2
0535-0042	NUT-HEX M3X0.5	2
0624-0324	SCREW-TPG 4-20	2
5040-1179	SPACER	1
78345-90011	QUICK REF.GUIDE	1
78354-40205	SUBPANEL EXT	1
78356-66540	BD AY-CO2	1
78356-66541	BD AY-O2	1

Socketed Parts

Component Part	Description	Qty
5181-1469	EPR-CO2/O2	1
5180-5599	MP68701L	1

Parameter Option: #C03 CO2 / NIBP

C03

NP , CO2

Front Panel Parts
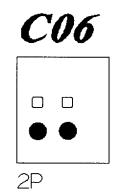
Component Part	Description	Qty
5040-1184	HSG-CONN-MET/L.H	1
78354-60007	CONN.PNEUMATIC	1
78354-61963	MEMB.SWT-P-C03-T	1
78354-66546	BD AY CONN CO2	1
78354-66547	BD AY LED FRONT	1

Option Parts

Component Part	Description	Qty
0362-0695	TEM.QUICK MALE	1
0460-1455	TAPE-INDL .5IN-W	0
0515-0885	SCR-MACH M4X8	2
0515-0886	SCR-MACH.M3X6MM	6
0515-1232	SCR M3.5X8 PH	1
0515-1323	SCR-MACH M3X30	2
0535-0023	NUT-HEX M4X0,7	4
0535-0042	NUT-HEX M3X0.5	2
0624-0324	SCREW-TPG 4-20	2
0624-0343	SCR-TPG	2
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	6
40401C	ADULT CUFF	1
5040-1167	COVER-BD./METAL.	1
5041-4218	COVER-BD.NIBP	1
5061-5624	CBL AY FL-10CONT	1
78345-90011	QUICK REF.GUIDE	1
78352-00601	SHIELD TRAFO	1
78352-60010	PUMP ASSY	1
78352-61601	CBL AY PUMP PWR	1
78352-66538	BD AY NIBP PARAMETER	1
78354-40205	SUBPANEL EXT	1
78354-90022	SERV.SUPPL./C03	1
78356-66540	BD AY-CO2	1

Socketed Parts

Component Part	Description	Qty
5181-1469	EPR-CO2/O2	1
0181-1499	EPR-NBP JAPAN	1
5180-5599	MP68701L	1

Parameter Option: #C06 2 PRESS0

C06

2P

Front Panel Parts
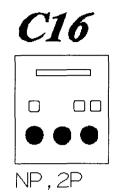
Component Part	Description	Qty
5040-1176	HSG-CONN DUAL/SL	1
78354-66533	BD-DUAL PRES/PAT	1
78834-61966	MEMBRANE SWITCH ASSY	1

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	2
0515-1323	SCR-MACH M3X30	4
0535-0042	NUT-HEX M3X0.5	2
5040-1167	COVER-BD./METAL.	1
78353-66534	BD-DUAL PRES PAR	1
78354-40205	SUBPANEL EXT	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1

Parameter Option: #C16 DUAL PRESS NIBP

C16

NP , 2P

Front Panel Parts

Component Part	Description	Qty
78354-61984	MEMBR.SW-#C16-1/4 M	1
78354-66562	BD AY- DUAL PRESS.	1
78354-66547	BD AY LED FRONT	1
78354-60007	CONN.PNEUMATIC	1
5040-1176	HSG-CONN DUAL/SL	1

Option Parts

Component Part	Description	Qty
0460-1455	TAPE-INDL .5IN-W	0
0515-0885	SCR-MACH M4X8	2
0515-0886	SCR-MACH.M3X6MM	6
0515-1232	SCR M3.5X8 PH	1
0515-1323	SCR-MACH M3X30	2
0535-0023	NUT-HEX M4X0,7	4
0535-0042	NUT-HEX M3X0.5	2
0624-0343	SCR-TPG	2
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT.	2
2190-0586	WASH LOCK M4	6
40401C	ADULT CUFF	1
5040-1167	COVER-BD./METAL.	1
5041-4218	COVER-BD.NIBP	1
5061-5624	CBL AY FL-10CONT	1
5061-5626	CABLE AY-1/4 MOD/FL	1

Option Parts (continued)

Component Part	Description	Qty
78352-00601	SHIELD TRAFO	1
78352-60010	PUMP ASSY	1
78352-61601	CBL AY PUMP PWR	1
78352-66538	BD AY NIBP PARAMETER	1
78353-66534	BD-DUAL PRES PAR	1
78354-40205	SUBPANEL EXT	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5181-1499	EPR-NBP JAPAN	1

Parameter Option: #C18 2 PRESS / CO2

C18

C02, 2P

Front Panel Parts

Component Part	Description	Qty
78354-61965	MEMB.SWT-P-C18-T	1
78354-66546	BD AY CONN CO2	1
78354-66562	BD AY- DUAL PRESS.	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1

Option Parts

Component Part	Description	Qty
0362-0695	TEM.QUICK MALE	1
0515-1232	SCR M3.5X8 PH	1
0515-1323	SCR-MACH M3X30	4
0535-0042	NUT-HEX M3X0.5	2
5040-1167	COVER-BD./METAL.	2
78345-90011	QUICK REF.GUIDE	1
78353-66534	BD-DUAL PRES PAR	1
78354-40205	SUBPANEL EXT	1
78356-66540	BD AY-CO2	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5181-1469	EPR-CO2/O2	1

Parameter Option: #J10 ANALOG INTF.LIMT

Option Parts

Component Part	Description	Qty
78353-66590	BD.AY-LTD.INTERF	1

Socketed Parts

Component Part	Description	Qty
5180-2872	EPR 8.8K/LTD 780	1

Parameter Option: #J11 ANNOT INTERFACE

Option Parts

Component Part	Description	Qty
78353-66592	BD AY-780 AIF	1

Socketed Parts

Component Part	Description	Qty
5180-2898[1]	EPR -780 8K	1
		or
5181-1483	EPR-780 8K ST	1
5180-2899[2]	EPR -780 16K	1
		or
5181-1484	EPR-780 16K ST	1

1 If #E15 ordered, replace 5180-2898 with 5181-1483

2 If #E15 ordered, replace 5180-2899 with 5181-1484.

Parameter Option: #J12 SDN INTERFACE

Option Parts

Component Part	Description	Qty
78353-01212	BRACKET-CVR 780	-1
78353-04107	CVR-PROTECT.780	-1
78353-66594	BD CONN SDN	1
78354-66595	BD AY SDN INTERF	1

Socketed Parts

Component Part	Description	Qty
5181-1470	EPR SDN	1
5181-1472	EPR SDN MES	1

Parameter Option: #J13 RS232 INTERFACE

Option Parts

Component Part	Description	Qty
0400-0601	GROMMET-CHANNEL	0
0515-1091	SCR M3,5X10 PAN	1
0515-1232	SCR M3.5X8 PH	-1
0561-5662	BD AY-EXT.40-PIN	0
78353-01217	BRACKET-HOLDER	1
78354-01210	BRACKET-EXT/BL.	-1
78354-01211	BRACKET-EXT./RS	1
78354-66598	BD AY-RS232 IF	1
78354-66599	BD AY-CONN/RS232	1
78354-67002	PROGR KIT RS232	0
78354-90015	PROGR.GUIDE	0

Socketed Parts

Component Part	Description	Qty
5180-7485	ERP RS232	1

Instrument Model Number: 78834A

Model Description: Patient Monitor (Neonatal)
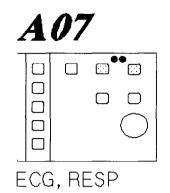
Basic Unit Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	4
0624-0343	SCR-TPG	1
1258-0124	PIN PROG JUMPER	1
40476A-100	LEADWIRE ELECTR.	1
40481B-001	REDUX NEONATAL	1
5021-3646	SPACER	1
5040-1167	COVER-BD./METAL.	1
5040-1184	HSG-CONN-MET/L.H	1
5041-4202	KNOB-DESMOP/GRAY	8
5041-4237	COVER-PLSTC,AUX.	1
5061-5691	COMMON UNIT 4/4	1
78353-01212	BRACKET-CVR 780	1
78353-04107	CVR-PROTECT.780	1
78353-66503	BD AY-3CH INTERP	1
78353-66595	BD AY-SDN INTERF	1
78354-01210	BRACKET-EXT/BL.	1
78354-04102	COVER-AUDIO 780	1
78354-20220	INSTR CARD-CENT/E	1
78354-66602	BD AY-DISPL/uP	1
78832-66518	BD AY-LAMP	1
78832-66519	BD AY-BATTERY	1
78832-66562	BD AY-RESP.	1
78833-20200	INSTR.CARD LH/E.	1
78834-90011	INSTALL. BOOK	1
78834-91001	OP.GUIDE-ENGLISH	1
78334A #A07	ECG RESP.	0
78334A #A08	ECG RESP.2X TEMP	0
78334A #A09	ECG RESP.PL	0
78334A #A10	ECG RESP.2P	0
78834A #A21	ECG RES.2XT.2XP.	0
78834A #A22	ECG,RESP,2T,3PR.	0
78834A #A35	E,R,2T2P,PO2CO2D	0
78834A #C31	1INPUT,PO2C02,DR	0
78834A #C32	2INPUT,PO2C02,DR	0

Basic Unit Parts (continued)

Component Part	Description	Qty
78834A #E20	PRESS KPA	0
78834A #E25	TCPO2 IN KPA	0
78834A #J10	ANALOG INTF.LTD	0
78834A #J11	ANNOT.INTERFACE	0
78834A #J12	SDN INTEPFACE	0
78834A #J13	RS 232 IF	0
78834A #880	TESTPLUG PO2/CO2	0
9223-0514	TAPE-INDL 80MM	1.5

Socketed Parts

Component Part	Description	Qty
5180-5529	EPROM-ECG	1
5180-5572	EPROM-RESP.	1
5180-5573	EPROM-RESP.	1
5181-4702	EPR-DISPL/ENGL.	1
5181-4745	EPR CHA R GEN STD	1
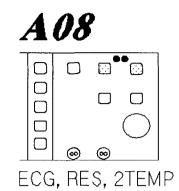
Parameter Option: #A07 (ECG. RESP)

A07

ECG, RESP

Front Panel Parts

Component Part	Description	Qty
78834-40285	PANEL FRNT/#A07	1
78832-66561	BD CONN ECG RESP	1
5040-1184	HSG-CONN DUAL/SL	1
5040-1185	HSG CONN-MET/R.H	1
5040-1179	SPACER	1
78354-40201	SUBPNL.EXT/BLANK	1

Parameter Option: #A08 (ECG, RESP, 2T)

A 08

ECG, RES, 2TEMP

Front Panel Parts

Component Part	Description	Qty
78834-40287	PANEL-FRONT/A22	1
78834-66565	BD-ECG,RESP,T1/2	1
5040-1184	HSG-CONN DUAL/SL	1
5040-1176	HSG-CONN DUAL/SL	1
78354-40201	SUBPNL.EXT/BLANK	1
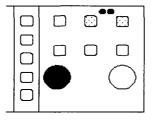
Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	1
5040-1167	COVER-BD./METAL.	1
5041-4216	ADAPTER-TEMP.CON	1
78353-01207	BRACKET-TEMP CON	1
78353-61606	CABLE AY-TEMP.II	2
78354-66554	BD-DUAL,TEMP.PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5544	EPR-64K/TEMP	1

Parameter Option: #A09 (ECG, RESP, PI)

A09

ECG, RESP, PRESS

Front Panel Parts

Component Part	Description	Qty
78834-40283	PANEL-FRNT/#A09	1
78832-66561	BD CONN ECG RESP	1
78354-66531	BD CONN PI	1
5040-1184	HSG-CONN-MET/L.H	1
5040-1185	HSG-CONN-MET/R.H	1
5040-1179	SPACER	1
5040-1199	HOUSING-CONN.	1
78354-40201	SUBPNL.EXT/BLANK	1

Option Parts
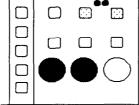
Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	1
1LJ6-0001	RAM 28P16K	1
5040-1167	COVER-BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	1
78353-66532	BD AY-PRESS/PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1

Parameter Option: #A10 (ECG, RESP, 2P)

A10

ECG, RESP, 2PRESS

Front Panel Parts

Component Part	Description	Qty
78834-40282	PANEL-FRNT/#A10	1
78833-66531	BD CONN ECG/R/PR	1
5040-1184	HSG-CONN-MET/L.H	1
5040-1176	HSG-CONN DUAL/SL	1
78354-40201	SUBPNL.EXT/BLANK	1
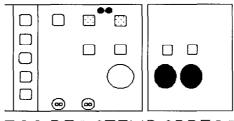
Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	2
5040-1167	COVER-BD./METAL.	1
5041-4202	KNOB-DESMOP/GRAY	1
78353-66534	BD-DUAL PRES PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	0

Parameter Option: #A21 (ECG, RESP, 2T, 2P)

A21

ECG,RES,2TEMP,2PRESS

Front Panel Parts

Component Part	Description	Qty
78354-40253	PANEL-FRNT, 1/4	1
78834-40287	PANEL-FRONT/A22	1
78354-40202	PANEL-SUB/EXTEND	1
78354-66533	BD-DUAL PRES/PAT	1
3131-0485	SWITCH AY-4 KEY	1
5040-1176	HSG-CONN DUAL/SL	2

Option Parts
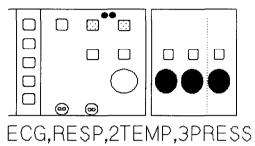
Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	3
0515-0897	SCR-MACH.M3X8MM	5
0515-1323	SCR-MAC H M3X30	2
3101-2813	SWITCH AY.-DUAL	1
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	2
5041-4216	ADAPTER-TEMP.CON	1
78353-01207	BRACKET-TEMP CON	1
78353-61606	CABLE AY-TEMP.II	2
78353-66534	BD-DUAL PRES PAR	1
78354-66554	BD-DUAL,TEMP.PAR	1
78834-66565	BD-ECG,RESP,T1/2	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5544	EPR-64K/TEMP	1

Parameter Option: #A22 (ECG, RESP, 2T, 3P)

A22

ECG,RESP,2TEMP,3PRESS

Front Panel Parts

Component Part	Description	Qty
78354-40252	PANEL-FRNT/PLAST	1
78834-40287	PANEL-FRONT/A22	1
78354-40202	PANEL-SUB/EXTEND	1
ILJ6-0001	RAM 28P16K	1
3131-0485	SWITCH AY-4 KEY	1
78354-66531	BD CONN P1	1
78354-66533	BD-DUAL PRES/PAT	1
5040-1176	HSG-CONN DUAL/SL	2
5040-1199	HOUSING-CONN.	1
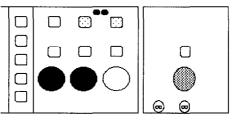
Option Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	2
0515-0897	SCR-MACH.M3X8MM	5
0515-1323	SCR-MACH M3X30	2
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	3
5041-4216	ADAPTER-TEMP.CON	1
78353-01207	BRACKET-TEMP CON	1
78353-61606	CABLE AY-TEMP.II	2
78353-66532	BD AY-PRESS/PAR	1
78353-66534	BD-DUAL PRES PAR	1
78354-66554	BD-DUAL,TEMP.PAR	1
78834-66565	BD-ECG,RESP,T1/2	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5545	EPR-64K/TEMP#A22	1
ILJ6-0001	RAM 28P16K	1

Parameter Option: #A35 (E, R, 2T2P, P02C02D)

A35

ECG,RESP,2T,2P,tcp02/C02

Front Panel Parts

Component Part	Description	Qty
78354-40258	PNL-FRNT/TCP,2T	1
78834-40282	PANEL-FRNT/#A10	1
78354-40202	PANEL-SUB/EXTEND	1
3131-0485	SWITCH AY-4 KEY	1
78834-66575	BD TEM P02/PC02	1
5040-1176	HSG-CONN DUAL/SL	2
5040-1179	SPACER	1

Option Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	4
0515-0897	SCR-MACH.M3X8MM	2
0515-1323	SCR-MACH M3X30	2
0624-0324	SCREW-TPG 4-20	4
3101-2813	SWITCH AY.-DUAL	1
5040-1167	COVER-BD./METAL.	2
5041-4202	KNOB-DESMOP/GRAY	2
5041-4223	COVER-BD PARAM.	1
5061-5678	BD AY-EXT.20PIN	0
78353-61606	CABLE AY-TEMP.II	2
78353-66534	BD-DUAL PRES PAR	1
78354-66554	BD-DUAL,TEMP.PAR	1
78833-20260	INSTR.CARD RH/E.	1
78833-20261	INSTR.CARD RH/FR	0
78833-20262	INSTR.CARD RH/G.	0

Option Parts (continued)
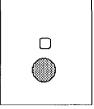
Component Part	Description	Qty
78833-20263	INSTR.CARD RH/D.	0
78833-20264	INSTR.CARD RH/SP	0
78833-20265	INSTR.CARD RH/IT	0
78833-20267	INST.CRD RH/FINN	0
78833-20270	INSTR.CRD RH/JAP	0
78833-66531	BD CONN ECG/R/PR	1
78834-66572	BD P02/PC02 PAR	1
78834-66573	BD AY BAROMETER	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-5544	EPR-64K/TEMP	1
5180-5577	EPR-TCP02/C02	1

Parameter 4/4 Option: #C31 (INPUT, P02C02, DR)

C31

tcp02/C02 (1 Input)

Front Panel Parts

Component Part	Description	Qty
78354-40256	PNL-FRNT/1 X TC	1
78354-40201	SUBPNL.EXT/BLANK	-1
3131-0485	SWITCH AY-4 KEY	1
78834-66575	BD TEM P02/PC02	1
5040-1176	HSC-CONN DUAL/SL	1
5040-1179	SPACER	1
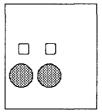
Option Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	4
0515-1323	SCR-MACH M3X30	2
3101-2813	SWITCH AY.-DUAL	1
5041-4202	KNOB-DESMOP/GRAY	1
5041-4223	COVER-BD PARAM.	1
5061-5678	BD AY-EXT.20PIN	0
78354-40202	PANEL-SUB/EXTEND	1
78833-20260	INSTR.CARD RH/E.	1
78833-20261	INSTR.CARD RH/FR	0
78833-20262	INSTR.CARD RH/G.	0
78833-20263	INSTR.CARD RH/D.	0
78833-20264	INSTR.CARD RH/SP	0
78833-20265	INSTR.CARD RH/IT	0
78833-20267	INST.CRD RH/FINN	0
78833-20270	INSTR.CRD RH/JAP	0
78834-66572	BD P02/PC02 PAR	1
78834-66573	BD AY BAROMETER	1

Socketed Parts

Component Part	Description	Qty
5180-5577	EPR-TCP02/C02	1

Parameter 4/4 Option: #C32 (INPUT, P02C02, DR)

C32

tcp02/C02 (2 Input)

Front Panel Parts

Component Part	Description	Qty
78354-40257	PNL-FRNT/2 X TC	1
78354-40201	SUBPNL.EXT/BLANK	-1
3131-0485	SWITCH AY-4 KEY	1
78834-66576	BD DUAL P02/PC02	1
5040-1176	HSG-CONN DUAL/SL	1

Option Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	4
0515-1323	SCR-MACH M3X30	2
3101-2813	SWITCH AY.-DUAL	1
5041-4202	KNOB-DESMOP/GRAY	2
5041-4223	COVER-BD PARAM.	2
5061-5678	BD AY-EXT.20PIN	0
78354-40202	PANEL-SUB/EXTEND	1
78833-20260	INSTR.CARD-RH/E.	1
78833-20261	INSTR.CARD RH/FR	0
78833-20262	INSTR.CARD RH/G.	0
78833-20263	INSTR.CARD RH/D.	0
78833-20264	INSTR.CARD RH/SP	0
78833-20265	INSTR.CARD RH/IT	0
78833-20267	INST.CRD RH/FINN	0
78833-20270	INSTR.CRD RH/JAP	0
78834-66572	BD P02/PC02 PAR	2
78834-66573	BD AY BAROMETER	1

Socketed Parts

Component Part	Description	Qty
5180-5577	EPR-TCP02/C02	1

Parameter 4/4 Option: #J10 (Limited Analog Interface)

Option Parts

Component Part	Description	Qty
78353-66590	BD.AY-LTD.INTERF	1

Socketed Parts

Component Part	Description	Qty
5180-2872	EPR 8.8K/LTD 780	1

Parameter 4/4 Option: #J11 (Annot. Interface)

Option Parts

Component Part	Description	Qty
78353-66592	BD AY-780 AIF	1

Socketed Parts

Component Part	Description	Qty
5180-2898	EPR -780 8K	1
5180-2899	EPR -780 16K	1

Parameter 4/4 Option: #J12 (SDN Interface)

Option Parts

Component Part	Description	Qty
78353-01212	BRACKET-CVR 780	-1
78353-04107	CVR-PROTECT.780	-1
78353-66594	BD CONN SDN	1
78353-66595	BD AY-SDN INTERF	1

Socketed Parts

Component Part	Description	Qty
5180-5559	EPR-SDN MES	1
5180-5578	EPR-SDN	1

Parameter 4/4 Option: #J13 (RS232 Interface)

Option Parts

Component Part	Description	Qty
0400-0601	GROMMET-CHANNEL	.05
0515-1091	SCR M3,5X10 PAN	1
0515-1232	SCR M3.5X8 PH	-1
5061-5662	BD AY-EXT.40-PIN	0
78353-01217	BRACKET-HOLDER	1
78354-01210	BRACKET-EXT/BL.	-1
78354-01211	BRACKET-EXT./RS	1
78354-66598	BD AY-RS232 IF	1
78354-66599	BD AY-CONN/RS232	1
78354-90015	PROGR.GUIDE	0

Socketed Parts

Component Part	Description	Qty
5180-7485	ERP RS232	1

Model: 78834A

Instrument Model Number: 78834C

Model Description: Patient Monitor (Neonatal)
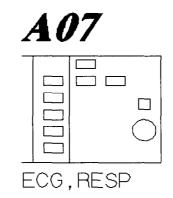
Basic Unit Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	4
0624-0343	SCR-TPG	1
1258-0124	PIN PROG JUMPER	1
5021-3646	SPACER	1
5040-1167	COVER-BD./METAL.	1
5040-1184	HSG-CONN-MET/L.H	1
5041-4210	FRONPANEL PLAST.	1
5041-4237	COVER-PLSTC,AUX.	1
5061-8328	COMMON UNIT 4/4	1
78353-01212	BRACKET-CVR 780	1
78353-04107	CVR-PROTECT.780	1
78353-66503	BD AY-3CH INTERP	1
78354-01210	BRACKET-EXT/BL.	1
78354-66702	BD AY DISPL/UP	1
8354-9011A	INSTALLATION GUIDE	1
78832-66562	BD AY-RESP.	1
78834-66510	BD AY LED ALARM	1
78834-66519	BD AY BATTERY	1
5040-1179	SPACER	1
5040-1184	HSG-CONN-MET/L.H	1
5040-1185	HSG CONN-MET/R.H	1

Socketed Parts

Component Part	Description	Qty
5180-5529	EPROM-ECG	1
5180-5572	EPROM-RESP. 1	1
5180-5573	EPROM-RESP. 2	1
5180-0880	EPROM DISPLAY	1
5181-0881	EPR DISPL ENG	0
5181-4745	EPR CHAR GEN STD	0
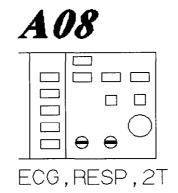
Parameter Option: #A07 (ECG RESP)

A07

ECG , RESP

Front Panel Parts

Component Part	Description	Qty
78834-61901 (T)	TEXT FRONT PANEL	1
		or
78834-61931 (S)	SYMBOL FRONT PANEL	1
78834-66561	BD ECG RESP NEO	1
5040-1184	HSG CONN MET/L.H	1
5040-1185	HSG CONN MET /R.H.	1
5040-1179	SPACER	1

Parameter Option: #A08 ECG RESP 2X TEMP
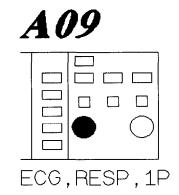
A08

ECG , RESP , 2T

Front Panel Parts

Component Part	Description	Qty
78834-61902 (T)	TEXT FRONT PANEL	1
		or
78834-61932 (S)	SYMBOL FRONT PANEL	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1
78353-61606	CABLE AY-TEMP.II	2
78834-66564	ECG RESP NEO 2T	1

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	1
5040-1167	COVER-BD./METAL.	1
5041-4216	ADAPTER-TEMP.CON	1
78353-01207	BRACKET-TEMP CON	1
78354-66554	BD-DUAL,TEMP.PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5544	EPR-64K/TEMP	1

Parameter Option: #A09 ECG RESP P1

A09

ECG , RESP , 1P

Front Panel Parts

Component Part	Description	Qty
78834-61903 (T)	TEXT FRONT PANEL	1
		or
78834-61933 (S)	SYMBOL FRONT PANEL	1
78354-66531	BD CONN P1	1
78834-66561	BD ECG RESP NEO	1
0515-0897	SCR-MACH.M3X8MM	1
5040-1179	SPACER	1
5040-1184	HSG-CONN-MET/L.H	1
5040-1185	HSG CONN-MET/R.H	1
5040-1199	HOUSING-CONN.	1

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	1
5040-1167	COVER-BD./METAL.	1
78353-66532	BD AY-PRESS/PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
1LJ6-0001	RAM 28P16K	1

Parameter Option: #A10 ECG RESP 2P
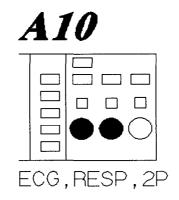
A10

ECG , RESP , 2P

Front Panel Parts
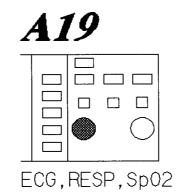
Component Part	Description	Qty
78834-61904 (T)	TEXT FRONT PANEL	1
		or
78834-61934 (S)	SYMBOL FRONT PANEL	1
78834-66531	ECG RESP NEO 2P	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1184	HSG-CONN-MET/L.H	1

Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	2
5040-1167	COVER-BD./METAL.	1
78353-66534	BD-DUAL PRES PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1

Parameter Option: #A19 ECG RESP SPO2

A19

ECG,RESP,SpO2

Front Panel Parts

Component Part	Description	Qty
78834-61905 (T)	TEXT FRONT PANEL	1
		or
78834-61935 (S)	SYMBOL FRONT PANEL	1
78354-66511	BD AY CONN SPO2	1
78834-66561	BD ECG RESP NEO	1
5040-1179	SPACER	1
5040-1184	HSG-CONN-MET/L.H	1
5040-1185	HSG-CONN-MET/R.H	0
5040-1199	HOUSING-CONN.	1

Option Parts
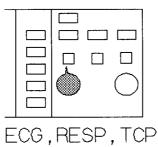
Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	2
5040-1161	COVER BD SPO2	1
5041-4300	LBL INFO/SPO2	1
78354-61606	CABLE AY-SPO2	1
78354-66520	BD AY-SPO2 PARAM.	1

Socketed Parts

Component Part	Description	Qty
5181-1482	EPROM-SPO2	1

Parameter Option: #A35 ECG RESP TCP

A35

ECG, RESP, TCP

Front Panel Parts
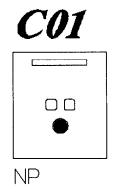
Component Part	Description	Qty
78834-61906 (T)	TEXT FRONT PANEL	1
		or
78834-61936 (S)	SYMBOL FRONT PANEL	1
78834-66561	BD ECG RESP NEO	1
78834-66577	BD AY TCP2 2T	1
5040-1179	SPACER	1
5040-1184	HSG-CONN-MET/L.H	1
5040-1185	HSG CONN-MET/R.H	1
5040-1199	HOUSING-CONN.	1

Option Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	2
0515-0897	SCR-MACH.M3X8MM	2
0515-1323	SCR-MACH M3X30	6
5040-1167	COVER-BD./METAL.	1
5040-1187	COVER-ECG-PREAMP	1
5041-4223	COVER-BD PARAM.	1
5061-5678	BD AY-EXT.20PIN	0
78834-66572	BD PO2/PCO2 PAR	1
78834-66573	BD AY BAROMETER	1

Socketed Parts

Component Part	Description	Qty
5180-7406	EPR-TCP O2/CO2	1

Parameter Option: #C01 NIBP

C01

NP

Front Panel Parts

Component Part	Description	Qty
78354-40205	SUBPANEL EXT	1
78354-60007	CONN.PNEUMATIC	1
78354-61961	MEMB.SWT-P-C01-T	1
78354-66547	BD AY LED FRONT	1
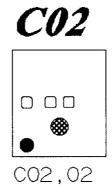
Option Parts

Component Part	Description	Qty
0460-1455	TAPE-INDL .5IN-W	0
0515-0886	SCR-MACH.M3X6MM	4
0515-1232	SCR M3.5X8 PH	2
0535-0023	NUT-HEX M4X0,7	4
0535-0042	NUT-HEX M3X0.5	2
0624-0343	SCR-TPG	4
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0413	WASH-LK EXT	2
2190-0586	WASH LOCK M44	0
5041-4218	COVER-BD.NIBP	1
5061-5624	CBL AY FL-10CONT	1
78352-00601	SHIELD TRAFO	1
78352-60010	PUMP ASSY	1
78352-66538	BD AY NIBP PARAMETER	1

Socketed Parts

Component Part	Description	Qty
5181-1499	EPR-NBP JAPAN	1

Model: 78834C

Parameter Option: #C02 CO2/O2

C02

CO2, O2

Front Panel Parts
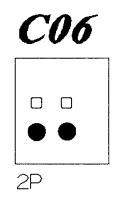
Component Part	Description	Qty
78354-40205	SUBPANEL EXT	1
78354-61962	MEMB.SWT-P-C02-T	1
78354-66543	BD-CONN CO2/O2	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1179	SPACER	1

Option Parts

Component Part	Description	Qty
0362-0695	TEM.QUICK MALE	1
0515-0886	SCR-MACH.M3X6MM	3
0515-0887	SCR M3.5X0.6	1
0515-0897	SCR-MACH.M3X8MM	3
0515-1323	SCR-MACH M3X30	2
0535-0042	NUT-HEX M3X0.5	2
0624-0324	SCREW-TPG 4-20	2
5040-1167	COVER-BD./METAL.	2
78345-90011	QUICK REF.GUIDE	1
78356-66540	BD AY-CO2	1
78356-66541	BD AY-O2	1

Socketed Parts

Component Part	Description	Qty
5181-1469	EPR-CO2/O2	1
5180-5599	MP68701L	1

Parameter 4/4 Option: #C06 2 PRESS

C06

2P

Front Panel Parts

Component Part	Description	Qty
78354-40205	SUBPANEL EXT	1
78834-61966	MEMBRANE SWITCH ASSY	1
78354-66533	BD-DUAL PRES/PAT	1
5040-1176	HSG-CONN DUAL/SL	1
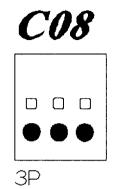
Option Parts

Component Part	Description	Qty
0515-0897	SCR-MACH.M3X8MM	2
0515-1323	SCR-MACH M3X30	4
0535-0042	NUT-HEX M3X0.5	2
5040-1167	COVER-BD./METAL.	1
78353-66534	BD-DUAL PRES PAR	1
78354-66533	BD-DUAL PRES/PAT	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1

Parameter 4/4 Option: #C08 3 PRESS

C08

3P

Front Panel Parts

Component Part	Description	Qty
78834-61967	MEMB.SWT-P-C08-T	1
78354-66531	BD CONN P1	1
78354-66553	BD-CONN.2PR,2TEM	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1199	HOUSING-CONN.	1
78354-40205	SUBPANEL EXT	1

Option Parts
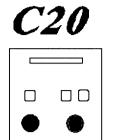
Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	2
0515-0897	SCR-MACH.M3X8MM	4
0515-1323	SCR-MACH M3X30	2
0535-0042	NUT-HEX M3X0.5	2
5040-1167	COVER-BD./METAL.	1
78353-66532	BD AY-PRESS/PAR	1
78353-66534	BD-DUAL PRES PAR	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
1LJ6-0001	RAM 28P16K	1

Parameter 4/4 Option: #C20 NIBP/SPO2

C20

SpO2,NIBP

Front Panel Parts

Component Part	Description	Qty
78354-40205	SUBPANEL EXT	1
78354-61986	MEMBR.SW-#C20-1/4 M	1
5040-1199	HOUSING-CONN.	1
78354-60007	CONN.PNEUMATIC	1
78354-66511	BD AY CONN SPO2	1
78354-66547	BD AY LED FRONT	1

Option Parts

Component Part	Description	Qty
0460-1455	TAPE-INDL .5IN-W	0
0515-0886	SCR-MACH.M3X6MM	4
0515-1232	SCR M3.5X8 PH	2
0515-1323	SCR-MACH M3X30	2
0535-0023	NUT-HEX M4X0,7	4
0535-0042	NUT-HEX M3X0.5	2
0624-0343	SCR-TPG	4
1400-1153	CLAMP-CABLE	1
1400-1347	HOSE CLAMP	1
1520-0249	BUFFER	2
2190-0586	WASH LOCK M4	4
5040-1161	COVER BD SPO2	1
5041-4218	COVER-BD.NIBP	1
5041-4300	LBL INFO/SPO2	1
5061-5624	CBL AY FL-10CONT	1
5061-5626	CABLE AY-1/4 MOD/FL	1
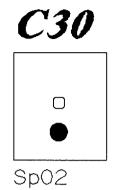
Option Parts (continued)

Component Part	Description	Qty
78352-00601	SHIELD TRAFO	1
78352-60010	PUMP ASSY	1
78352-61601	CBL AY PUMP PWR	1
78352-66538	BD AY NIBP PARAMETER	1
78354-61606	CABLE AY-SPO2	1
78354-66520	BD AY-SPO2 PARAM.	1

Socketed Parts

Component Part	Description	Qty
5181-1482	EPROM-SPO2	1
5181-1499	EPR-NBP JAPAN	1

Parameter 4/4 Option: #C30 SPO2

C30

SpO2

Front Panel Parts

Component Part	Description	Qty
78354-40205	SUBPANEL EXT	1
78834-61968	MEMB.SWT-P-C30-T	1
78354-66511	BD AY CONN SPO2	1
5040-1199	HOUSING-CONN.	1

Option Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	4
0515-1323	SCR-MACH M3X30	2
0535-0042	NUT-HEX M3X0.5	2
5040-1161	COVER BD SPO2	1
5041-4300	LBL INFO/SPO2	1
78354-40205	SUBPANEL EXT	1
78354-61606	CABLE AY-SPO2	1
78354-66520	BD AY-SPO2 PARAM.	1
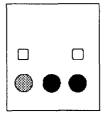
Socketed Parts

Component Part	Description	Qty
5181-1482	EPROM-SPO2	1

Parameter 4/4 Option: #C35 2 PRESS TCP

C35

TCP , 2P

Front Panel Parts

Component Part	Description	Qty
78354-40205	SUBPANEL EXT	1
78834-61969	MEMB.SWT-P-C35-T	1
78354-66562	BD AY- DUAL PRESS.	1
78834-66577	BD AY TCP2 2T	1
5040-1176	HSG-CONN DUAL/SL	1
5040-1199	HOUSING-CONN.	1
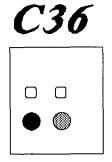
Option Parts

Component Part	Description	Qty
0515-0886	SCR-MACH.M3X6MM	2
0515-1323	SCR-MACH M3X30	4
0535-0042	NUT-HEX M3X0.5	2
5040-1167	COVER-BD./METAL.	1
5041-4223	COVER-BD PARAM.	1
5061-5678	BD AY-EXT.20PIN	0
78353-66534	BD-DUAL PRES PAR	1
78834-66572	BD PO2/PCO2 PAR	1
78834-66573	BD AY BAROMETER	1

Socketed Parts

Component Part	Description	Qty
5180-5528	EPROM-PRESSURE	1
5180-7406	EPR-TCP O2/C02	1

Parameter 4/4 Option: #C36 TCP SPO2

C36

SpO2 , TCP

Front Panel Parts

Component Part	Description	Qty
78834-61970	MEMB.SWT-P-C36-T	1
78354-66511	BD AY CONN SPO2	1
78834-66577	BD AY TCP2 2T	1
5040-1199	HOUSING-CONN.	2

Option Parts

Component Part	Description	Qty
0515-1323	SCR-MACH M3X30	4
0535-0042	NUT-HEX M3X0.5	2
5040-1161	COVER BD SPO2	1
5041-4223	COVER-BD PARAM.	1
5041-4300	LBL INFO/SPO2	1
5061-5678	BD AY-EXT.20PIN	0
78354-40205	SUBPANEL EXT	1
78354-61606	CABLE AY-SPO2	1
78354-66520	BD AY-SPO2 PARAM.	1
78834-66572	BD PO2/PCO2 PAR	1
78834-66573	BD AY BAROMETER	1

Socketed Parts

Component Part	Description	Qty
5180-7406	EPR-TCP O2/C02	1
5181-1482	EPROM-SPO2	1

Parameter 4/4 Option: #J10 (Limited Analog Interface)

Option Parts

Component Part	Description	Qty
78353-66590	BD.AY-LTD.INTERF	1

Socketed Parts

Component Part	Description	Qty
5180-2872	EPR 8.8K/LTD 780	1

Parameter 4/4 Option: #J11 ANNOT.INTERFACE

Option Parts

Component Part	Description	Qty
78353-66592	BD AY-780 AIF	1

Socketed Parts

Component Part	Description	Qty
5180-2898	EPR -780 8K	1
5180-2899	EPR -780 16K	1

Parameter 4/4 Option: #J12 SDN INTERFACE

Option Parts

Component Part	Description	Qty
78353-01212	BRACKET-CVR 780	-1
78353-04107	CVR-PROTECT.780	-1
78353-66594	BD CONN SDN	1
78354-66595	BD AY SDN INTERF	1

Socketed Parts

Component Part	Description	Qty
5181-1470	EPR SDN	1
5181-1472	EPR SDN MES	1

Parameter 4/4 Option: #J13 RS232 INTERFACE

Option Parts

Component Part	Description	Qty
0400-0601	GROMMET-CHANNEL	0
0515-1091	SCR M3,5X10 PAN	1
0515-1232	SCR M3.5X8 PH	-1
5061-5662	BD AY-EXT.40-PIN	0
78353-01217	BRACKET-HOLDER	1
78354-01210	BRACKET-EXT/BL.	-1
78354-01211	BRACKET-EXT./RS	1
78354-66598	BD AY-RS232 IF	1
78354-66599	BD AY-CONN/RS232	1
78354-90015	PROGR.GUIDE	0

Socketed Parts

Component Part	Description	Qty
5180-7485	ERP RS232	1

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Overall Assembly

Note: For Front Panel Mechanical Parts, please refer to Chapter 3

Faltblatt von alter Seite 3-121 hier einfügen

Figure 3-1. Overall Assembly for Revison A,B and C

Faltblatt von alter Seite 3-122 hier einfügen

Figure 3-2. Power Supply Assembly

Rear Panel Mechanical Parts/Chassis

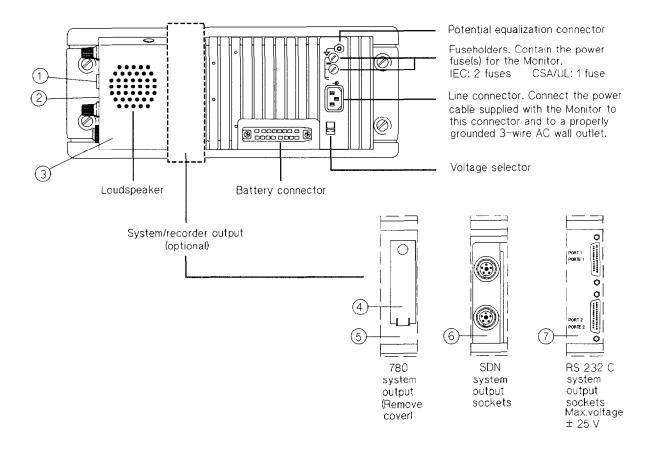**Figure 3-3. Rear Panel Mechanical Parts/Chasis**

Table 3-2. Rear Panel Mechanical Parts / Chasis

Item	Description	Part Number
1	Plastic cover for Aux. conn.	5041-4237
2	Audio side cover Std (3/4 & 4/4)	78353-04305
2	Audio side cover #J13, (3/4)	78353-04307
3	Audio cover Std (3/4 & 4/4)	78353-01218
3	Audio cover #J13 (3/4)	78353-04106
3	Audio cover #J13 (4/4)	78354-01210
4	Cover Std & #J11	78353-04107
5	System output bracket	78353-01212
6	System output conn. bracket incl. SDN conn. assy. (#J12)	78353-66594
7	System output conn. bracket (#J13, 4/4)	78354-01211

Fuse Part Numbers

Fuse Identification	78352C	78354C		78834C	
		314	414	314	414
#No2 IEC (2 fuses rqd)	2110-0449	2110-0449	2110-0536	2110-0449	2110-0536
#No1/No4 CSA/UL (1 fuse rqd)	2110-0360	2110-0360	2110-0007	2110-0360	2110-0007

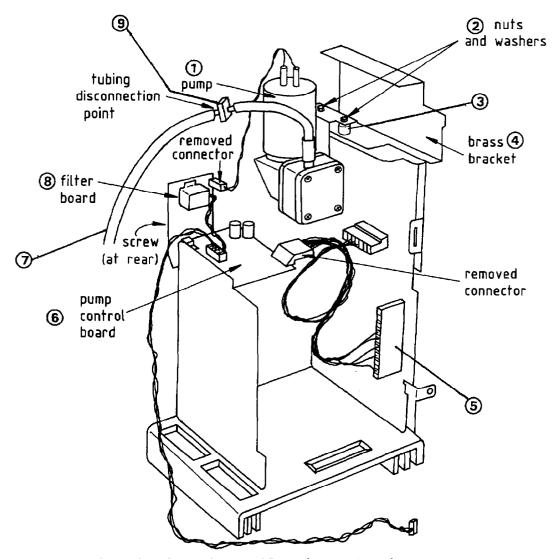# General Internal Parts For Non-Invasive Pressure

Figure 3-4. General Internal Parts for Non-Invasive Pressure

Table 3-3. General Internal Parts for Non-Invasive Pressure

Item	Description	Part Number (Rev A)	Part Number (Rev C)
1	Pump	78354-60002	78352-60010
2	Nuts and washers	0535-0023(4x)/2190-0586(4x)	
3	Shock absorber	1520-0249	
4	Brass bracket	78352-00601	
5	Cable assembly	78352-61601	
6	Pump control board	78352-66537	-
7	Internal tubing assembly	78352 A; 78352-60004	-
		78354 A; 78354-60006	-
8	Filter board	78352-66539	-
9	Air valve	5041-4287	-

A

Ordering Information

Direct Mail Order Program

U.S.A. ONLY

Orders for replacement parts and supplies can be placed through our Direct Mail Order Program for U.S. customers. There is no minimum or maximum order size. Your order will be shipped prepaid, usually on the same day it is received at our distribution center, where over 70,000 parts are in stock. (If an order cannot be processed, the order and payment will be returned to the customer along with an explanation.)

To place a mail order, send your check or money order - **NO CASH** - to:

HEWLETT-PACKARD
Mail Order Department
P.O. Box 722
Mountain View, California 94042

Payment should include $ 3.50 for handling and should be made payable to Hewlett-Packard. Include local sales tax, if applicable.

Please provide the following information with your order (PLEASE PRINT CLEARLY):

- Replaceable Part Number

- Description

- Unit Price

- Model number and description of the equipment with which the part is used

- Your name, your Company's name, and full return address

- Any special instructions

- If tax exempt, your state exemption number

For your convenience, a Direct Mail Parts and Supplies Order Form is provided on the back of this sheet, and may be duplicated as required. For parts price information or other questions, please call (415) 968-9200, extension 341 or 342.

Remember Direct Mail Orders cannot be shipped outside the United States.

OUTSIDE U.S. PLEASE CONTACT YOUR LOCAL HEWLETT-PACKARD OFFICE

Bitte "Direct Mail Parts and Supplies Order Form" hier einfügen

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6:00 AM to 5 PM Pacific Time

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ROCKVILLE, MD 20850
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